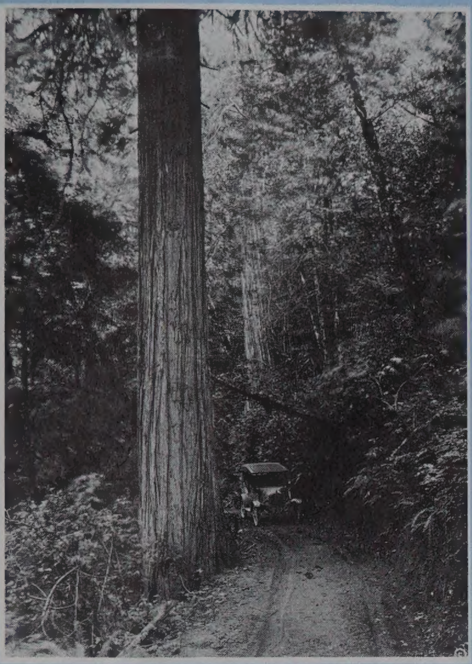
OREGON DEPT. OF TRANSPORTATION LIBRARY
TRANSPORTATION BUILDING
SALEM OR 9[illegible]

WHAT'S INSIDE



Tracing the steps, starting with a trail

Before the Oregon State Highway Department began, the state's transportation system consisted of trails following water courses or Indian traces, and rough-hewn roads carved out by exploring pioneers.
Page A3

Getting out of the mud

With the slogan "Getting Oregon Out of the Mud," the 1913 Legislature established the Oregon State Highway Department. The three commissioners--composed of the governor, secretary of state and state treasurer--agreed that it was unacceptable to create a hit-and-miss system. **Page A4**

Making dirt fly

As the first World War drew to a close, road-building conditions took an upswing. Men were released from the war industries, equipment became available, and restrictions were lifted on the sale of bonds.
Page A7

Fighting unemployment

With the stock market crash in the fall of 1929, many Oregonians who lost their jobs were searching for new employment. The Highway Commission responded with plans to increase construction activity and get Oregonians back to work. **Page A8**

The war years

With the onset of World War II, revenues decreased and costs increased to the point where existing roads could not be properly maintained. Construction jobs considered not essential to the war effort were later stopped. **Page A8**

The interstate era

The late 1950s saw a new era begin for the country's highway system when Congress passed the first Federal-Aid Highway Program Act to bring into being a national system of interstate and defense highways. **Page B1**

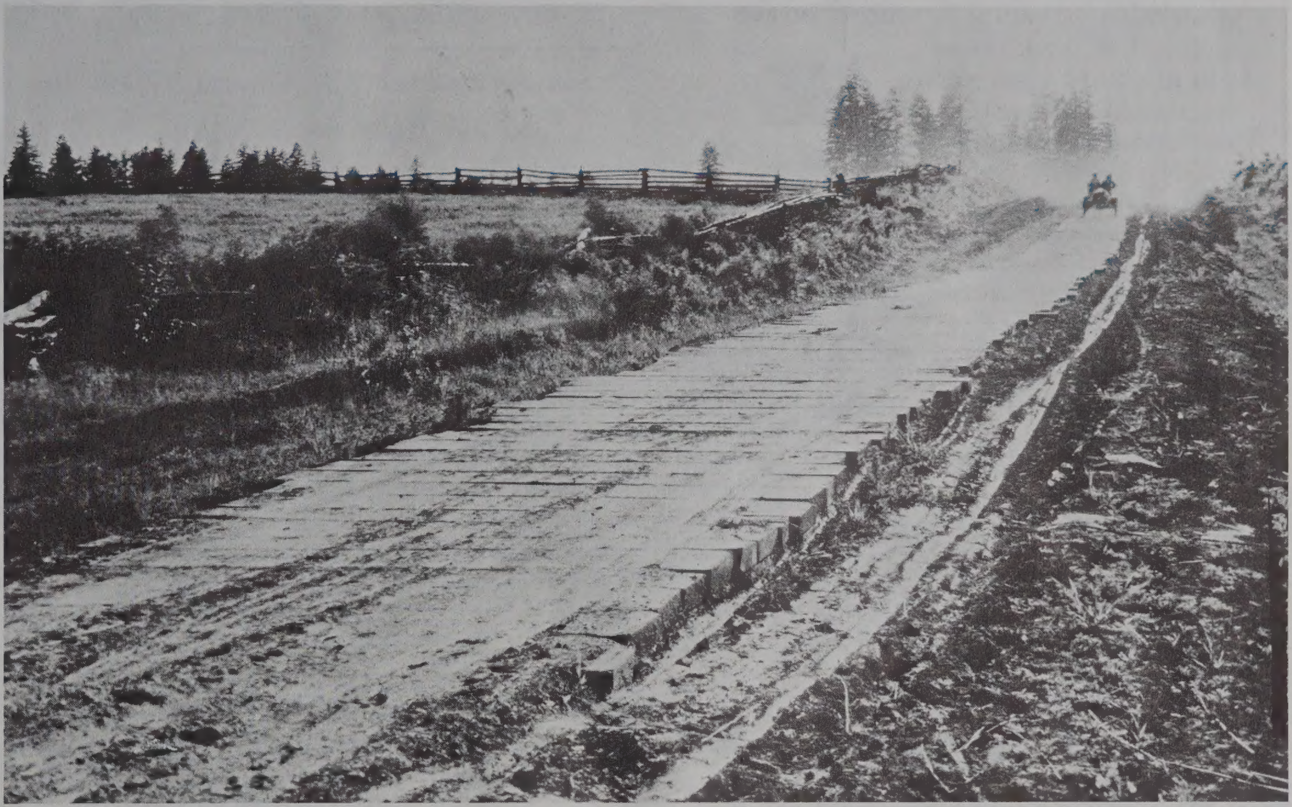
Modern technology

Computers to design roads, machines to grind up pavement and briskly lay it down anew, innovations regularly generated from Highway employees. Yes, times have changed.
Page B7

Serving Oregon on the Move . . .

The First 75 Years

THE OREGON STATE HIGHWAY DIVISION: SERVING OREGON SINCE 1913



PLANK ROAD--This photograph, taken about 1913, shows a plank road near Forest Grove. Also in that year, the state Legislature vowed to "Get Oregon out of the Mud" and into the era of the motor vehicle by creating the Oregon State Highway Department.

Out of mud, down the road

It was 1913.

Woodrow Wilson was inaugurated as president of the United States.

It was 14 years before Babe Ruth was to hit a record 60 home runs.

And on Feb. 23 of that year, in Salem, an event of more local interest took place--the creation of what is today known as the Oregon State Highway Division.

This publication is designed to commemorate that event and, as the nameplate indicates, "The First 75 Years" of the Oregon State Highway Division.

This is the Highway story.

With the commitment to 'Get Oregon Out of the Mud,' the 1913 Legislature formed what was then known as the Oregon State Highway Department

It begins shortly after the turn of the century, with a portrayal of Oregon's transportation system--a set of trails and farm-to-market dirt roads, most impassable during the winter months and disjointed from county to county.

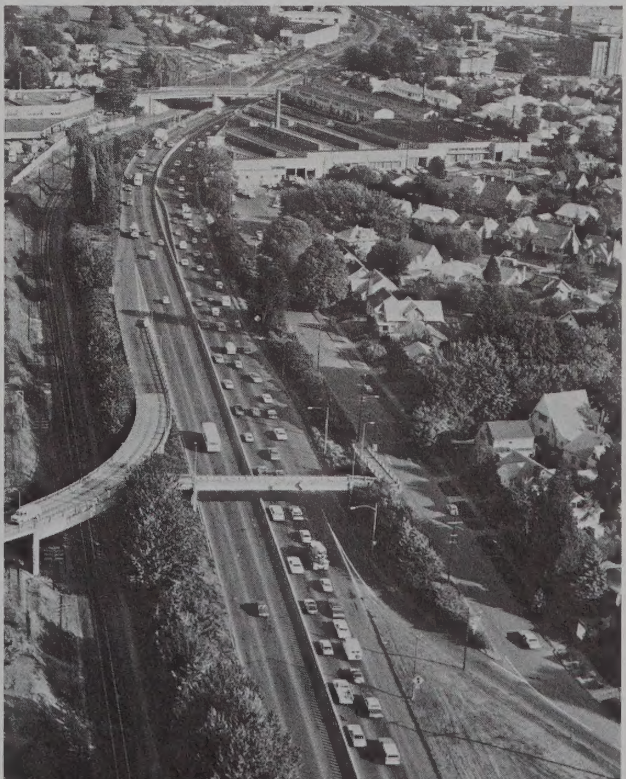
With the commitment to "Get Oregon Out of the Mud," the 1913 Legislature formed what was then known as the Oregon State Highway Department.

As the need to create a comprehensive roads network became increasingly clear, the composition of the policy-making Highway Commission changed character--from a set of elected officials to a voluntary and appointed panel of citizen representatives.

In that form, Highway confronted the challenges of the future: world wars, labor and material shortages, the Great Depression, the interstate era, the computer revolution.

In short, "The First 75 Years" introduces the reader to Oregon's first graveled and macadam roads and concludes with what we have today--a modern, all-weather highway system, graceful bridges and the latest in technology.

Through pictures and words, this publication chronicles the Highway Division's successful drive to bring Oregon travelers out of the mud and headed down the road.



FREEWAY--Networks of urban expressways provide commuters with a daily link between home and work. Portland's Banfield Expressway (above) has since been equipped with a light-rail transit line.

COMMENTARY

After 75 years, still setting the pace

By DON FORBES
State Highway Engineer

We've come a long way since 1913.

The Oregon State Highway Department began 75 years ago with a good idea--creating a comprehensive network of paved roads out of what began with a series of trails and disconnected county roads.

Since that time, successive generations have built the state roads system. With each new mile added have come more good ideas--and a lot of hard work.

Just as it must have seemed to our predecessors in 1913, the challenges before us remain great. Meeting those challenges will require even more of us than good ideas and hard work. They'll take strategic planning and setting priorities.

For example, we face:

- Maintaining a system of roads with dwindling federal funds.
- Managing our work and finding ways to continue providing excellent service without increasing our workforce and expenses. Being accountable.
- Keeping pace with a growing demand for a quality state transportation system--tied with Oregon's economic health, its citizens' safety and well-being.
- Training our people. Working effectively with the public means communicating well. Understanding how personal biases can affect the way we do business. Providing work conditions that encourage our employees to be innovative and creative.

As we celebrate the Highway Division's 75th birthday, it's natural to ask how we got where we are today--what we did right.

- Listening. Citizen and technical advisory groups play essential roles in planning the Highway Division's work. That role will remain vital.

While the way we do business has, and will continue to change, our essential services--planning for, building, operating and maintaining our roads system--will remain in strong demand by our centennial anniversary.

The personal vehicle will still be the preferred method of transportation. And we will continue to be the state's road experts.

But, like any viable and progressive organization, we need to plan for the future. We're doing that now. A Futures Forum this month assembled our country's key transportation experts. We are also studying testimony from the 2020 Consensus Transportation Program held at the State Capitol earlier this year.

I won't pretend to know what we'll face in the next quarter century. But, judging from where we are now, I certainly can guess.

For example, by our centennial we'll be considering alternatives to lighten the load placed on our state highways. The cooperation between Public Transit and Highway will become more essential than ever before. Our work force demographics will likely continue to change. And our transportation system will need to keep pace with the projected influx of another million people to Oregon.

As we celebrate the Highway Division's 75th birthday, it's natural to ask how we got where we are today--what we did right.

The age of an organization testifies as to its past. It proves, beyond a doubt, that it has managed to perform a useful service to the traveling public. It proves that we have managed to adapt and renew its human as well as its financial resources when conditions and leaders changed from decade to decade.

Any organization--in the public or private sector--can stay youthful if it has learned from its past, cherishes sound tradition and keeps everlastingly alert to the needs of tomorrow.

I believe the Oregon State Highway Division today still meets these strict standards. While the work done generations ago has served us well, we face challenges today that are equally as great as those facing our predecessors.

We still have ground to cover.

A note to our contributors: Many thanks for your help

Since we created this idea of a publication designed to commemorate the Highway Division's 75th anniversary, dozens of volunteers have offered their help.

In answering calls for help published in the Oregon Department of Transportation's employee publication, *VIA,* current and retired employees--from within and outside the Highway Division--have responded.

Below, we have listed some of those key players. To you all, we owe thanks.

Don Adams, deputy state highway engineer, for taking the lead as chairman of the Highway 75th Anniversary Committee, and for lending support.

Joe Sand, a former employee, for spending countless hours in the ODOT Library researching reams of historical material and an equally lengthy effort at the typewriter molding that information into a comprehensive draft.

Oscar White, retired assistant engineer of materials and Highway enthusiast, for helping us to make sense of often-unidentified photographs.

Cynthia Mendelson, of the Highway Division's Road Design Section, for her cooperation in researching historical material in assembling historical displays for the 1988 National Transportation Week.

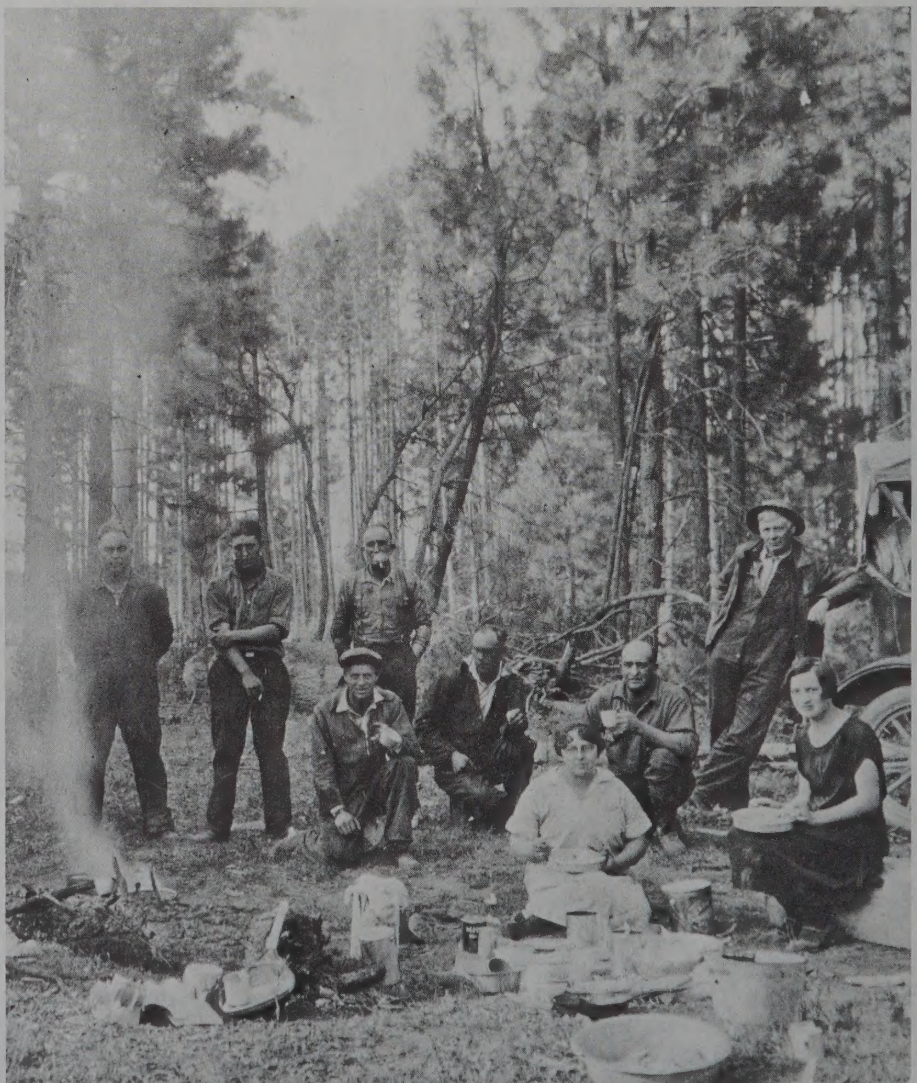
John Davenport and his ODOT Graphic Design crew, for their patience, professional skills and hard work in pasting together this publication's photographs and type, and generally for adding to its visual integrity.

Jerry Robertson and his ODOT Photo Services crew, for chronicling Highway Division activities in photographs since the 1930s.

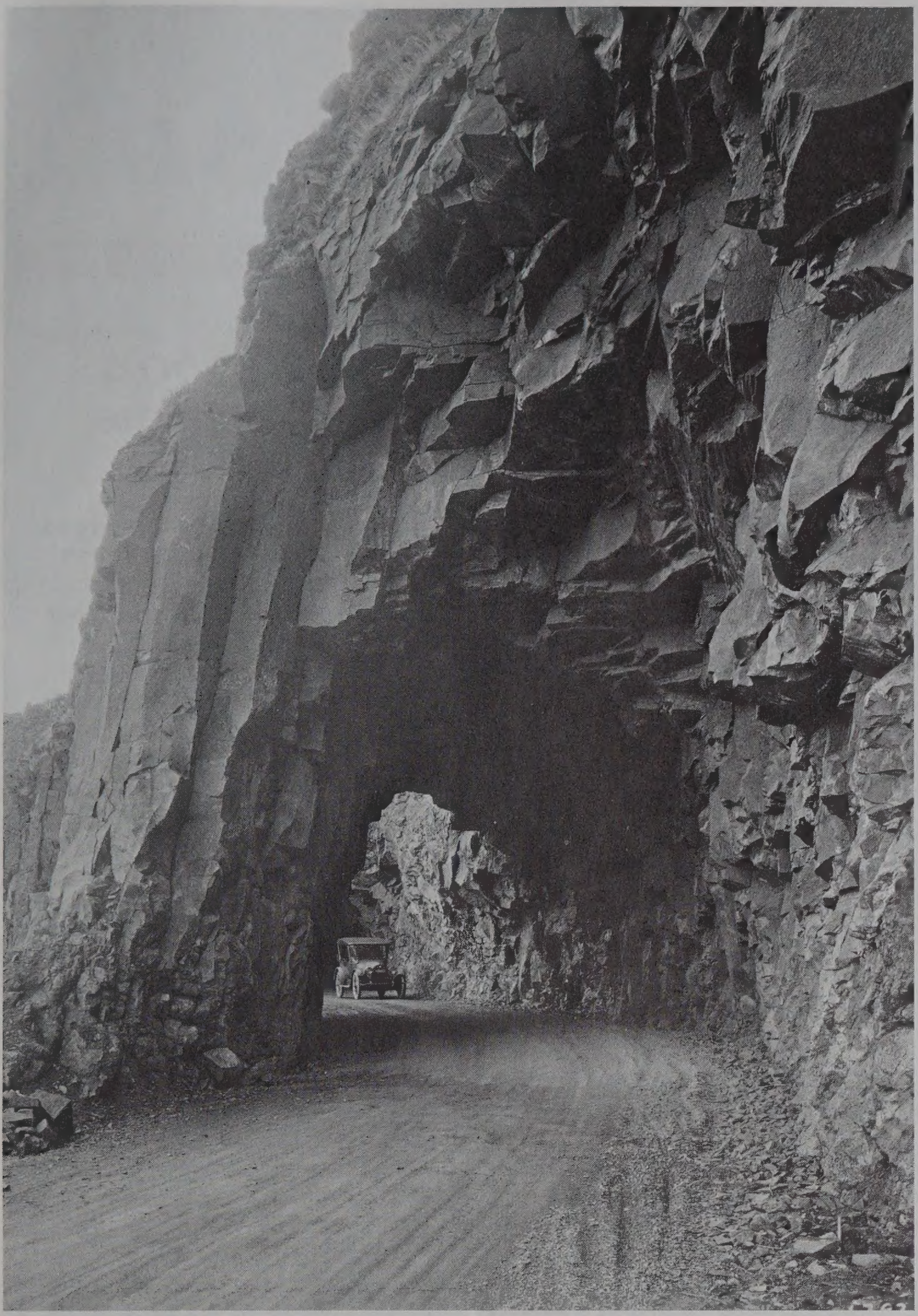
The **Public Affairs Office staff,** for offering their time to plan, proofread and advise.

Our predecessors, of course, for their insight, determination and hard work.

Andy Booz,
Editor



AT CAMP--Roy Nunn's Highway Department crew takes a breather at Fort Klamath Junction in this 1925 photograph.



ROCK AND A HARD PLACE--This Model T Ford makes its way through the Twin Tunnels between Hood River and Mosier on the Columbia River Highway. The twin tunnels have since been filled.

Trails set the course for early travelers

Highway history begins with trails.

Indian traces and water courses set the paths of trails in the early part of this century. Pioneers exploring those trails carved out rough-hewn roads. Graveled and macadam surfaces smoothed the surfaces for the automobile.

All those efforts--culminating in a complex all-weather highway system and graceful bridges--are the predecessors to the modern-day Oregon State Highway Division.

It took 75 years but, ultimately, Oregonians got out of the mud and headed down the road.

Before Oregon's Birth

The roadways and paths started before the birth of the Highway Department in 1913. They started even before the birth of Oregon.

While the land now known as Oregon was under a provincial government from 1841 to 1849, trails followed the line of least resistance.

Under territorial government, 1849-59, landowners built local ways adjacent to their holdings--in the main, farm-to-market roads established to give farmers access by horse and wagon to trading centers and rail points.

Some of those trails carried a light surface of gravel or rock. But most were earth roads and were generally impassable during the winter months.

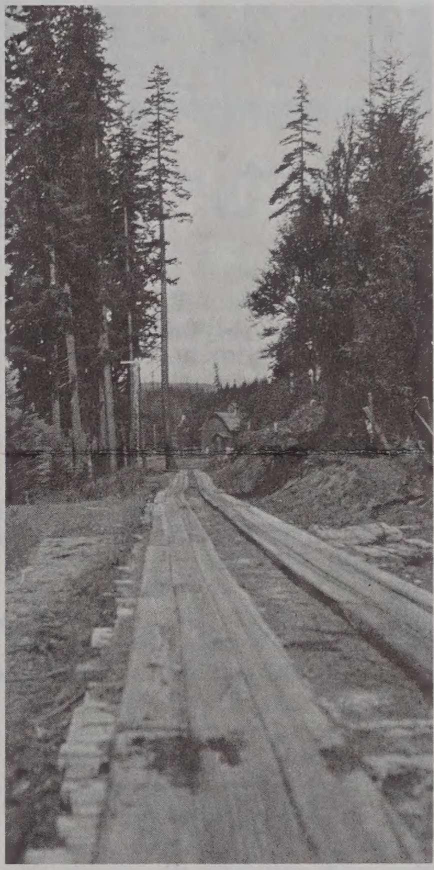
When Oregon became a state in 1859, the Legislature established a system of county road districts. Under that system, district supervisors and appraisers laid out county roads and assessed their cost by levying taxes against the adjacent landowners and by establishing a poll tax that could be paid either by day or by money. It was the taxpayers' option.

The Legislature decreed that males between age 21 and 50--except public officials and the infirm--had to work two days on public roads in the county where they lived.

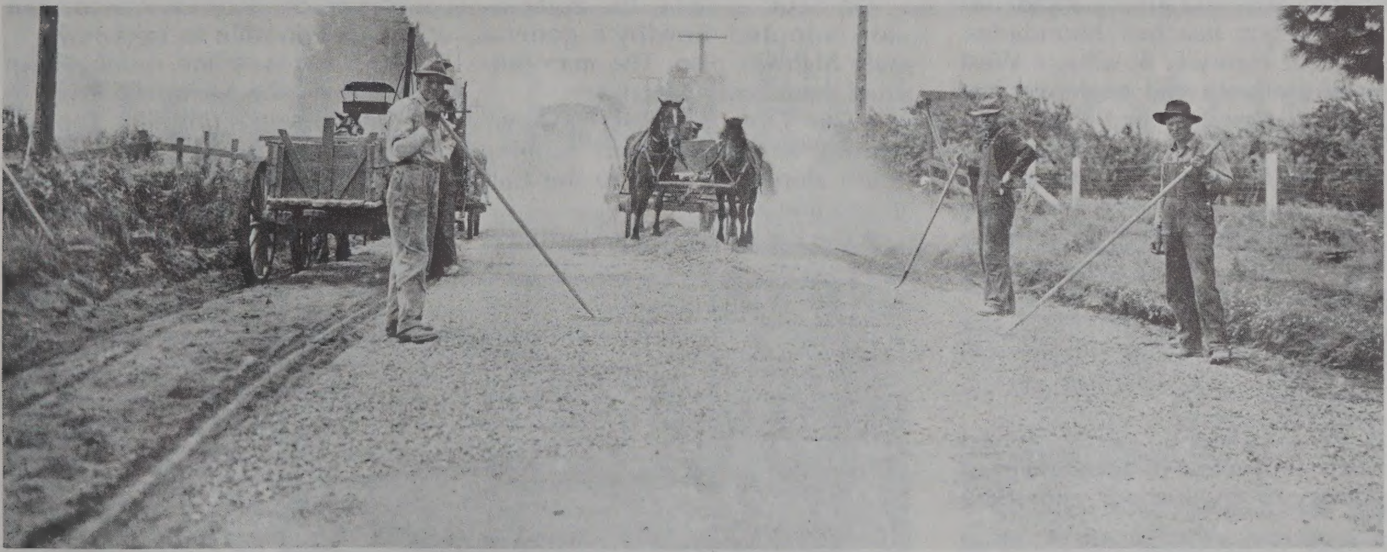
If those eligible men chose not to work, they could pick one of two alternatives:

They could pay the government $2 for every $2,000 of taxable property they owned.

Or they could go to jail.



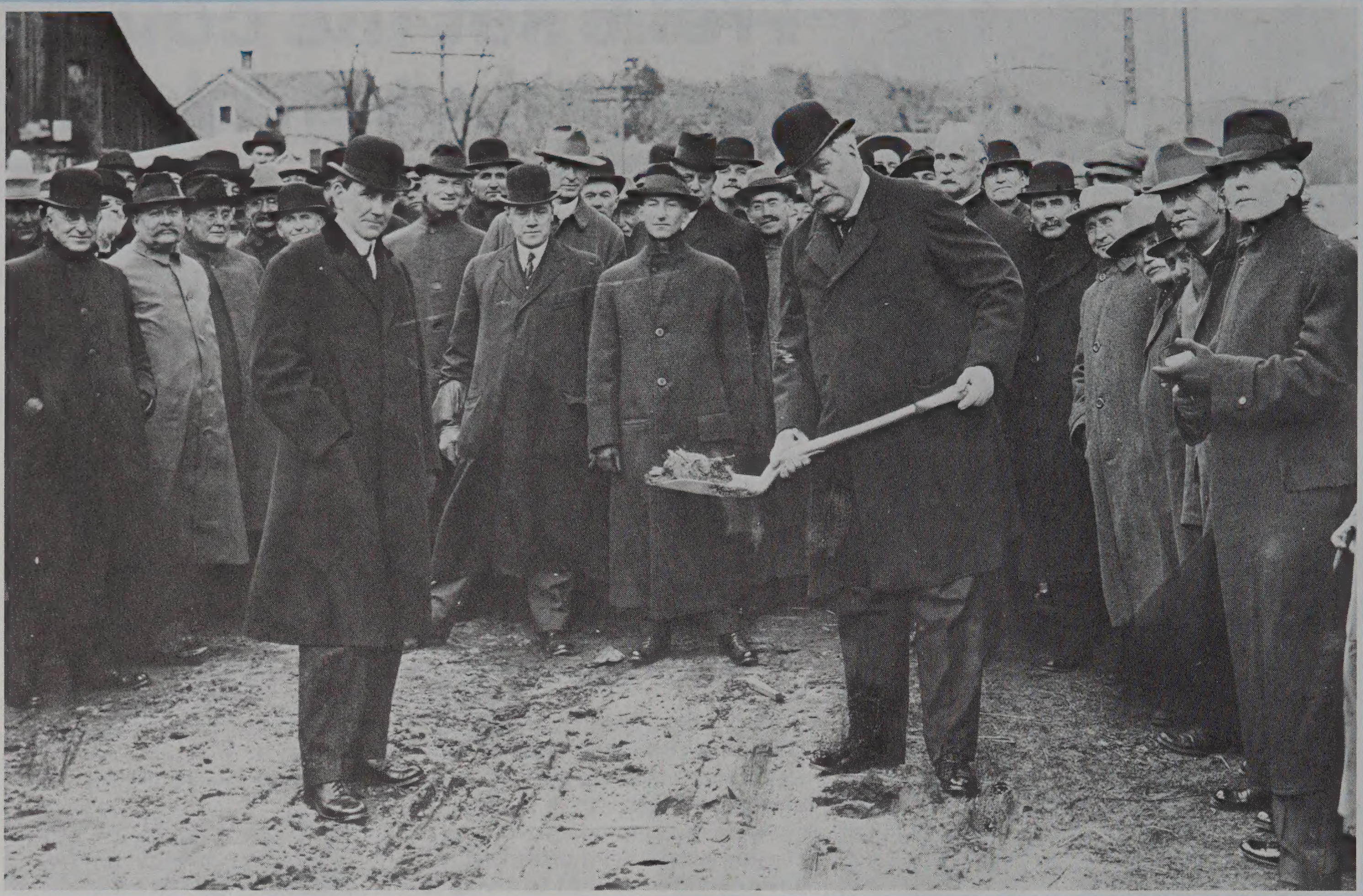
PLANK ROAD--This unidentified photograph of a plank road illustrates the condition of Oregon's roads system before the formation of the state Highway Department in 1913. The department's first annual report predicted "it will be many years before more than 10 percent" of Oregon's roads are hard surfaced.



EARLY ROAD--The workers shown in this 1910 photograph are constructing a macadam road near Hood River. Macadam roads are made by compacting into a solid mass a layer of small, broken stone on a convex and well-drained roadbed using fine stone dust and water as a cement.

ALMOST STUCK--This automobile maneuvers through a mudhole in Eastern Oregon. The 1913 Legislature was committed to "Get Oregon Out of the Mud."

TOURING--Out for a drive, these auto enthusiasts tour the North Umpqua Creek with some degree of difficulty in 1926.



Oregon's first state highway

Philanthropist and road builder Sam Hill turns the first shovelful of earth for Oregon's first highway. The 1913 photograph shows the Siskiyou Mountain section of the Pacific Highway in Jackson County. Across from Hill is Gov. Oswald West, who saw in Hill leadership to take Oregon out of the mud. Others in the group include prominent politicians.

Getting system started was no easy task

With the slogan "Get Oregon Out of the Mud," the 1913 Legislature established the Oregon State Highway Department.

The first Oregon Highway Commission--comprised of Gov. Oswald West, Secretary of State Ben W. Olcott and Treasurer Thomas B. Kay--enacted only one item of business at its first meeting, held on June 19, 1913. It paid voucher No. 1, an $85.28 postage bill.

At the time, it appeared crucial for the state to establish an effective roads network. The three commissioners agreed that it was unacceptable to create a hit-and-miss system. They chose instead to plan an integrated system of state highways to get Oregonians out of the mud and into the era of the motor vehicle.

It was also in 1913 that Gov. West told the Legislature that the ocean beach from the Columbia River on the north to the California state line on the south should be declared a public highway. Two years later, he told legislators that the beach had been reserved to the public as a highway. That action resulted in the 1967 Legislature declaring the state's sovereignty of the ocean beaches.

The 1969 Legislature strengthened the law and specifically identified Oregon beaches' boundaries.

Major Henry L. Bowlby, a West Point graduate and engineer, was hired as Oregon's first state highway engineer for an annual salary of $3,000. Bowlby's assistant was Samuel Lancaster, who had been sent to Europe to study road building methods. Bridge engineer was Charles H. Purcel.

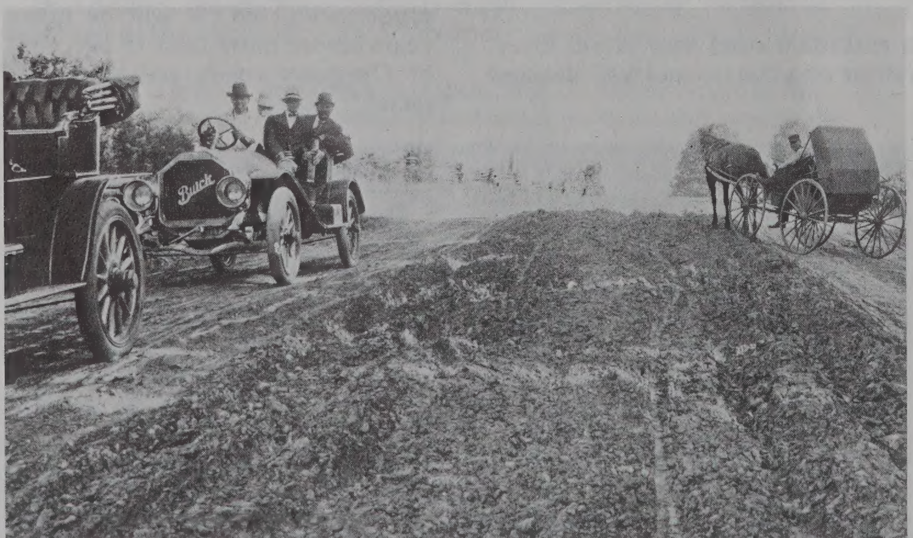
The Legislature financed the operation with a one-quarter mill state road tax, totaling almost $250,000.

The state had no oiled or paved roads, only a few hundred miles of primary or trunk roads and some 1,800 miles of secondary roads. Bowlby, in his first annual report, wrote: "It will be many years before more than 10 percent of these have been hardsurfaced."

One of Bowlby's first tasks was to map out a system of trunk roads to be improved and maintained by the state.

On Sept. 5, 1914, the commission adopted Bowlby's general state highway plan. The map outlined the following trunks:

- The "Oregon Beach Highway," starting at Seaside and running south along the coast to the California line.
- The Pacific Highway, starting at Portland and following the general line of the present Oregon Route 99-E south to Ashland and the California boundary. The "Capitol Highway" was projected along the general route of the present 99-W from Portland to Albany, where it joined the east-side line.
- The Dalles-California Highway, starting south from Wasco, ran through Prineville to Lakeview.
- An east-west line, running from Eugene via the McKenzie River to Redmond and Prineville; another projected east-west line left the Central Oregon trunk road at Milligan and headed for Burns and on to Ontario.



DOUBLE TAKE--The driver of this "one horsepower" buggy in this 1910 photograph, shot on Macadam Road near Forest Grove, takes a second look at the passing automobiles. The Buick is a 1909 Model 16 Tourabout, priced at $1,750. It had a 318-cubic-inch, four-cylinder engine, and was available in solid red or blue with white running gear. Macadam Road was named after the trade name of the asphaltic concrete used to pave it.

SURVEY CREW--This survey crew, photographed in 1919, is typical of the first Highway Department pioneers who helped to establish a system of trunk roads. Among them: the Pacific Highway and the "Oregon Beach Highway."

Columbia route forged by joint efforts

Editor's Note: The following article is condensed from a report on the Columbia River Gorge by Lewis McArthur of Portland, a member of the Historic Preservation League of Oregon.

The Columbia River Highway opened from Portland to Hood River in 1915, but planning and construction started much earlier.

In 1909, Lewis Russell of Portland paid for a survey of the highway. As proposed, the road would have had 17-percent grades and would have cost an estimated $42,000. The project died from lack of funding.

In 1912, Simon Benson, a lumberman and philanthropist, gave Oregon Gov. Oswald West $10,000 to construct a road around Shellrock Mountain. West used prison camp labor for the work. The road was the first section of substantial work in the Columbia River Gorge, but it was considered unsuccessful because of continued slippage.

Total cost of the highway was about $11 million.

Then a number of prominent citizens became involved. Among them were Samuel Hill, builder of Maryhill in Washington across the Columbia from Biggs. He persuaded the Washington state Legislature to allocate funds for a northbank highway, but lawmakers backed away from the proposal after surveys revealed it would cost about $30,000 per mile.

Hill then turned to Oregon and gathered Julius Meier (later governor), Henry Pittock (publisher of The Oregonian newspaper), C.J. Jackson (Oregon Journal publisher), Rufus Homan (county commissioner and later U.S. senator), and Benson.

In August 1913, the Multnomah County Commission voted to build a highway east to Hood River County with a maximum grade of 5 percent and a 24-foot roadway.

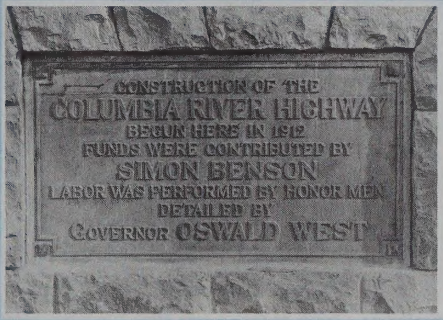
At Hill's suggestion, Samuel Lancaster, designer of Seattle's park and boulevard system, was hired as an engineer. He became the dominant force in the design of the Columbia River Highway.

In the fall of 1913, the Multnomah County Commission turned construction over to the newly formed Oregon Highway Commission, and the state appointed Henry Bowlby as state highway engineer with Lancaster as his assistant in charge of the Columbia River Highway.

Grading was completed from Chanticleer Point to Eagle Creek in 1914 and to Hood River in 1915. Bridge and tunnel construction was on schedule, and the highway opened to traffic from Portland to Hood River on July 6, 1915. That section, however, was not paved.

After lengthy debate, voters passed a $1.25-million Multnomah County special paving levy in early 1915 to provide a hard surface for the gorge highway and some other trunk roads in the county.

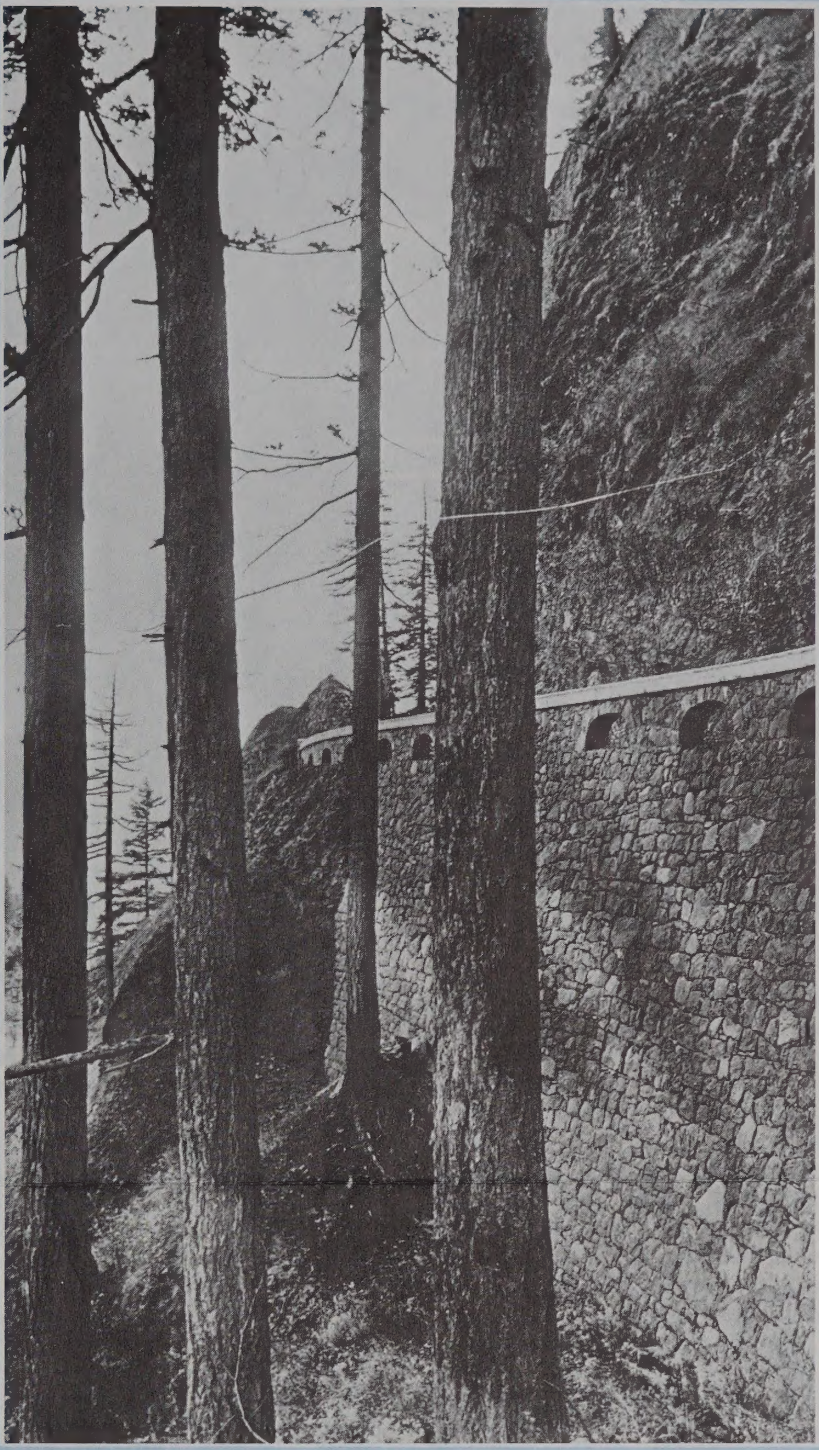
Simon Benson, in addition to being a chief benefactor and supporter of the highway, provided an extra, and perhaps more important gift. Benson purchased the property where Multnomah and Waukeena falls were located and deeded it to the city of Portland, which held the property as a park unit until it was transferred to the U.S. Forest Service.



Shortly after paving had reached Multnomah Falls in 1916, a grand opening was held on June 7. It featured a flag unfurling where the Vista House is now located. President Woodrow Wilson triggered the unfurling from the White House by pressing a button and sending an electrical current across the country.

Still, there was much work to be done on the Columbia River Highway, specifically on the Hood River section.

The Mitchell Point tunnel was finished in 1915, permitting through travel, but bridges remained unfinished and various sections still needed to be relocated and graded.

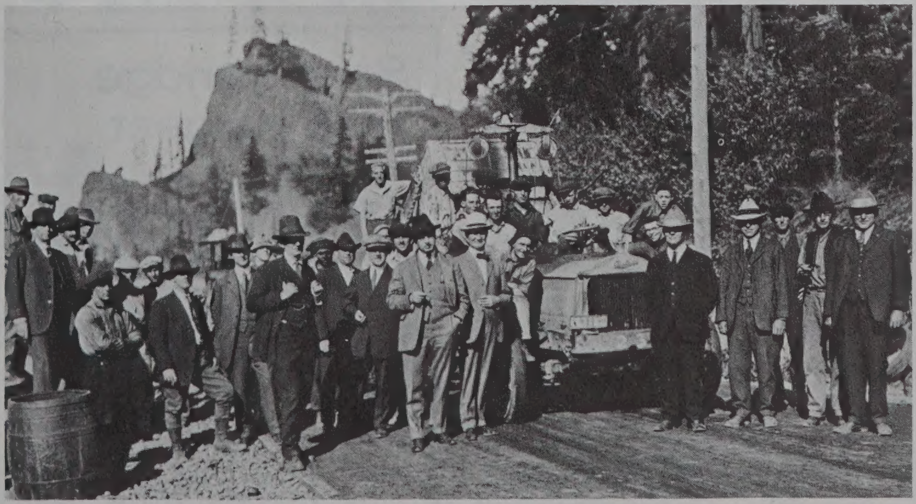


STONEWALLED--The Columbia River Highway sweeps toward Hamilton Mountain in Multnomah County (above). Also pictured are the Latourell Creek Bridge (below) and a highway marker (above, left).

The road was completed from Seaside to The Dalles in 1921, when it earned federal designation as U.S. 30.

Total cost of the highway was about $11 million. The state provided $7.6 million, the federal Bureau of Public Roads, $1.1 million, and the various counties, $2.3 million.

GORGE DRIVE -- Motorists cruise the Columbia River Highway.



DEDICATION--This ceremonial photograph was taken at the completion of a portion of the Columbia River Highway in 1914.

Segments still open to traffic

Today, segments of the 1915 Columbia River Highway are still open to traffic.

From Troutdale to Warrendale, the highway is intact and maintained as a popular scenic drive. From Hood River to The Dalles, the road remains intact except for the filled twin tunnels west of Mosier.

From Warrendale to Hood River, only short segments remain, many of which are accessible only by foot.

Roads, bridges left lagging at WWI onset

Gas tax fuels building boom

As the nation entered World War I in 1914, Oregon's Highway Commission checked over its transportation network. And generally speaking, it didn't like what it saw.

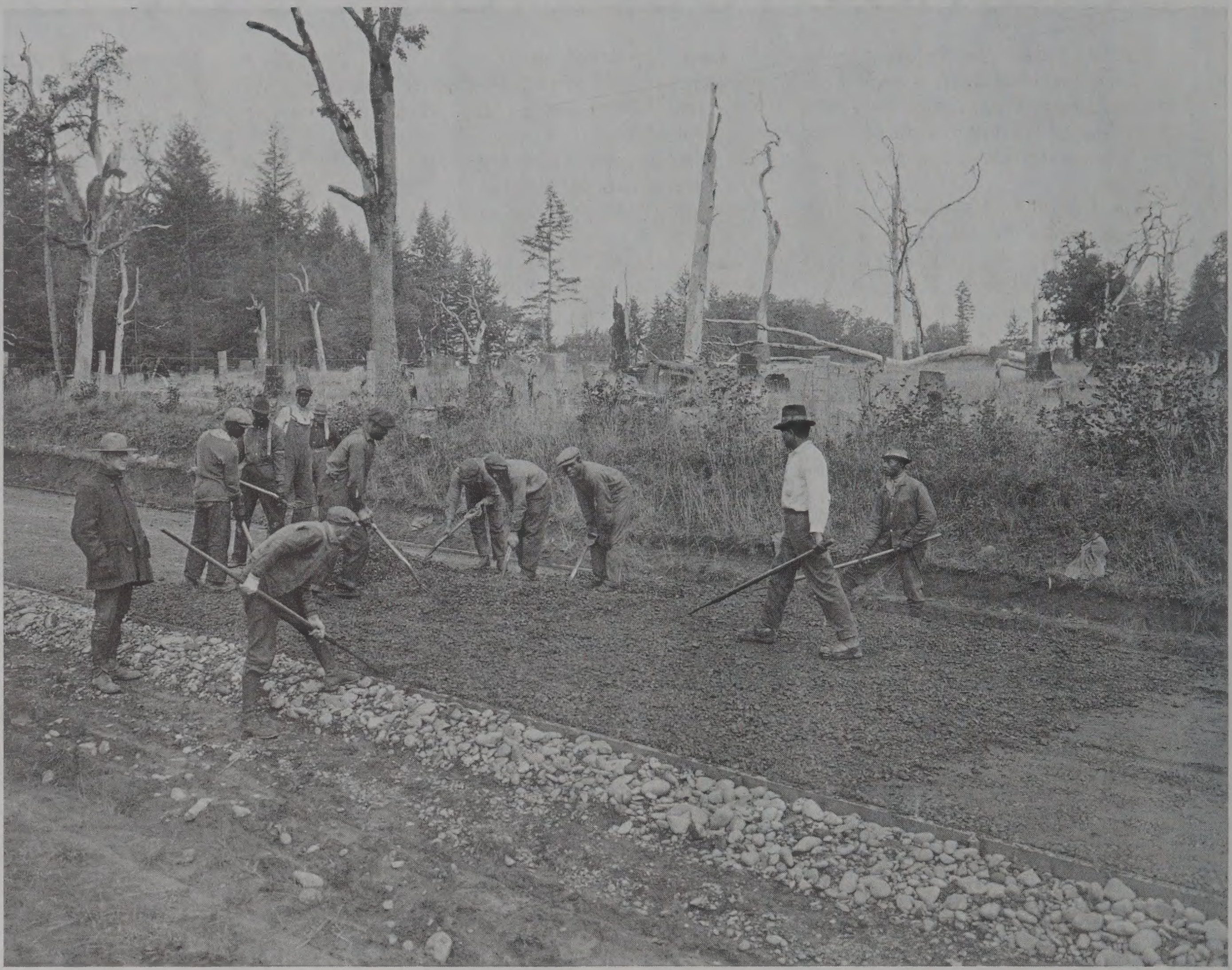
Highway Department annual reports indicate that, while other states were replacing their timber bridges with newer ones made of either steel or concrete, Oregon bucked that trend.

At the time, timber was Oregon's main industry, and good structural timber was available for between $10 and $15 per thousand board feet, compared to $25 or more per thousand board feet in most other states.

So, at least in Oregon, timber bridges were still in use in certain localities.

All of the state's first-class bridges were covered. While covered bridges lasted longer, an early Oregon State Highway Department report pointed to their drawbacks.

More often than not, county lines featured impassable gaps in the road system.



HARD LABOR--This Highway Department crew works on the Pacific Highway, one of the main trunks in the original state highway plan. The crew is spreading what is referred to as "hot stuff" in the Jefferson area of Marion County.

The report indicated they were a fire risk, had a shorter life than concrete or steel, did not "present a pleasing appearance," and were convenient living quarters for tramps and ambush areas for thieves. Besides, the report noted, many horses refused to cross a covered bridge at night.

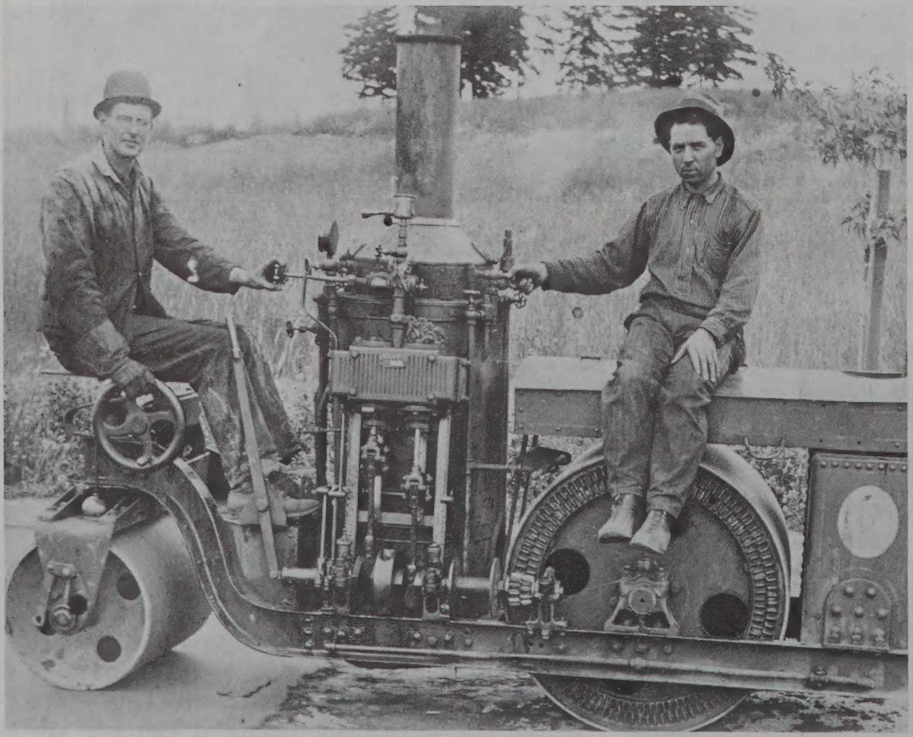
Oregon's roads system was lacking, too.

The state had no paved sections of road, outside of Multnomah, Clatsop and Jackson counties, by 1916. Gravel roads were rough and narrow, and there was no continuity in roadways from county to county. More often than not, county lines featured impassable gaps in the road system.

The 1917 Legislature considered the situation and decided that building roads was too big an undertaking for counties, so it handed the state that responsibility. That shift meant overhauling the Oregon Highway Commission.

The panel's redesign scrapped its structure of three top state elected officials, and substituted voluntary and appointed citizen representatives. In that first year, the commission was composed of Simon Benson of Portland, W.L. Thompson of Pendleton and E.J. Adams of Eugene.

Also in 1917, the new commission was authorized to enlarge the state highway system to 4,317 miles and add to it as needed. About 20 of those miles were paved.



IN OPERATION--Two Highway Department employees operate a steam-powered engine roller. The 1912 photo was taken in Portland.

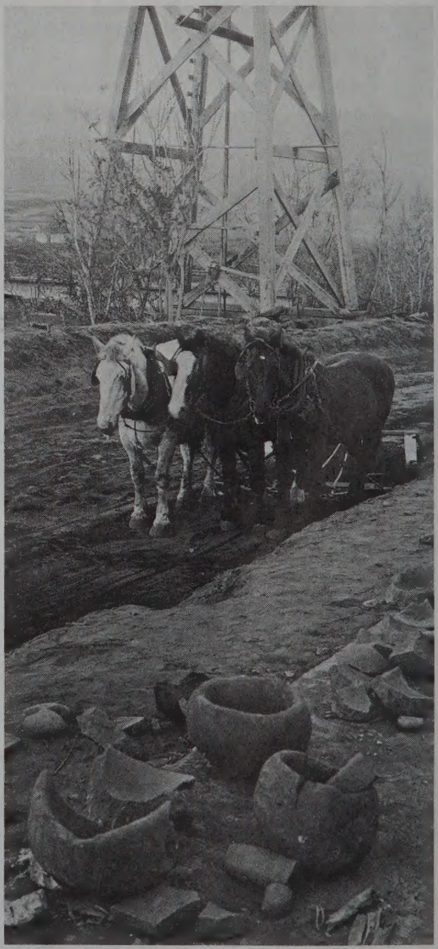
The Legislature authorized, and Oregon voters approved, a $6-million bond issue. In 1916, when Congress made its first authorization of federal aid for highways, Oregon got its share--another $206,481. That policy of providing federal aid for highways has since continued.

The state Legislature further planned for the financing of state highway construction and maintenance through motor vehicle license fees and by establishing a one-cent-per-gallon gasoline tax. That gas tax, enacted in 1919, was the first of its kind in the nation. Eventually, every state in the union relied on its gas tax as a major source of revenue for highway purposes.

While the new money helped, conditions were unfavorable to highway construction by the time World War I drew to a close.

Labor and materials were scarce, and wages and prices were high--when, that is, the labor and supplies were available.

For example, the state Highway Department purchased a railroad asphalt paving plant in 1918 but the plant remained stagnant that season because, at the time, no bituminous pavements were being produced.



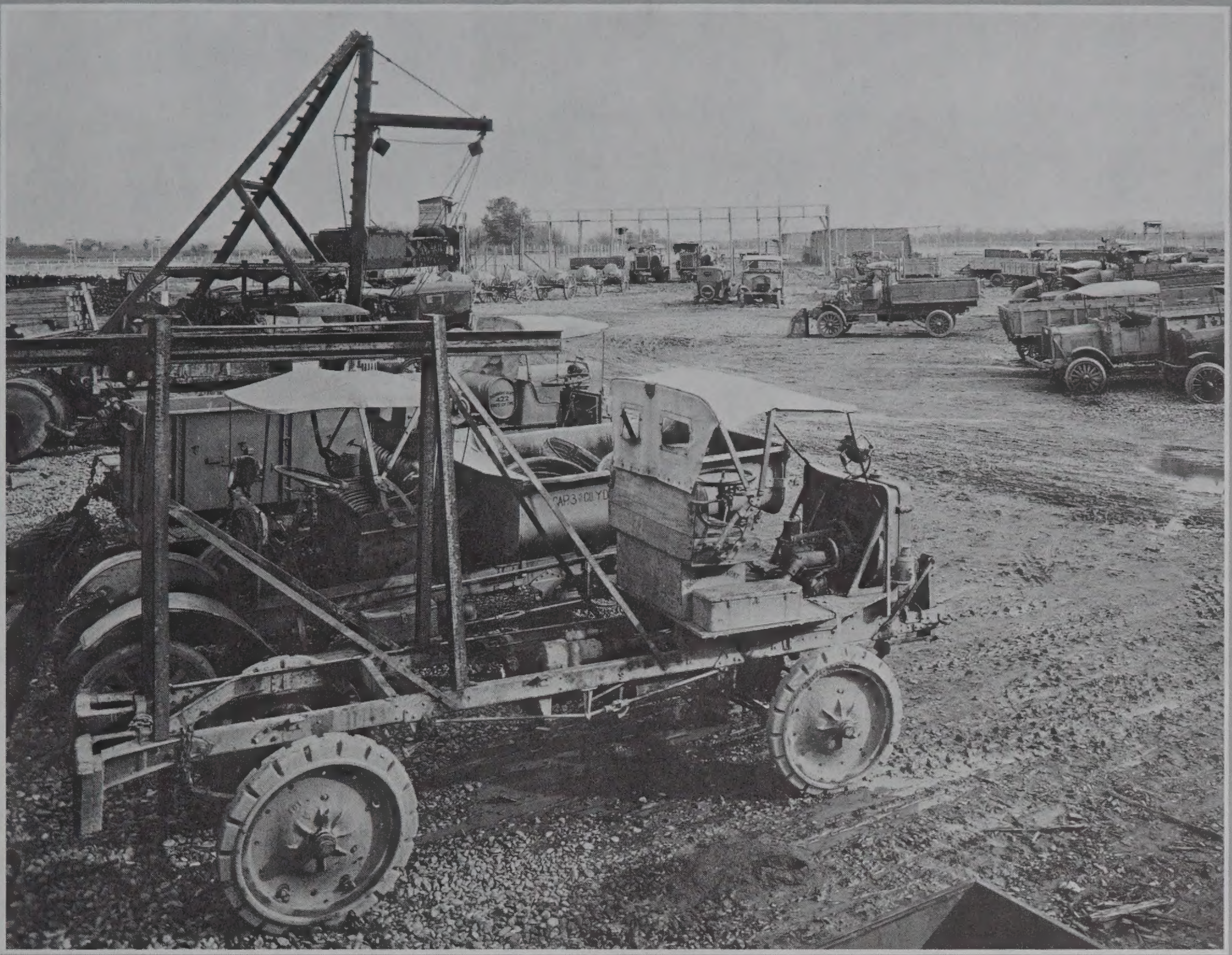
RELICS--Three work horses tow a device used in excavating Indian relics at Beg Eddy in Wasco County. The 1920 photograph is of a portion of the Columbia River Highway.

Salem bridge was biggest

The bridge crossing the Willamette River in Salem was one of the largest strictly highway bridges erected in the United States in 1918.

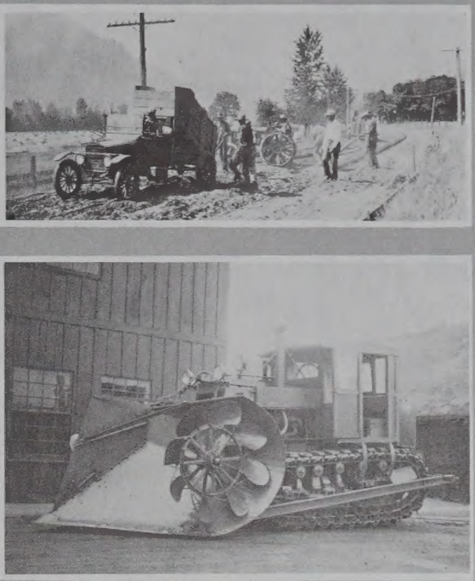
That bridge, which was an extension of Center Street, was replaced with the current bridge in 1986, according to State Bridge Engineer Walt Hart.

The structure had a total length of 2,220 feet.



THE YARD--This 1920 photograph shows the Highway Department's repairs shops and yards in Salem. The location of the old shops at that time was on Capitol Street N.E., near Mill Creek.

Modern equipment



WAY IT WAS--Highway employees pave a road near Glendale in 1927 (top), and a 1930s-vintage snowplow sits idle (above).

Oregon starts moving dirt, laying pavement

As World War I drew to a close, road-building conditions took an upswing.

It was reported in 1918 that the Oregon Highway Commission owned three concrete pavers, three road rollers, four rock crushers and six auto trucks, as well as a considerable amount of grading equipment.

But by 1919, servicemen returned from the war, men were released from the war industries, equipment became available and restrictions were lifted on the sale of bonds.

In short, the state began moving dirt and laying pavement.

From 1919 to 1920, more pavement was laid across Oregon than ever before. The department placed an estimated 600 percent more miles of pavement during that period than from 1917 to 1918. One of the most notable stretches of newly paved road was on the Columbia River Highway, from Astoria to Pendleton, which was nearly completed by 1920.

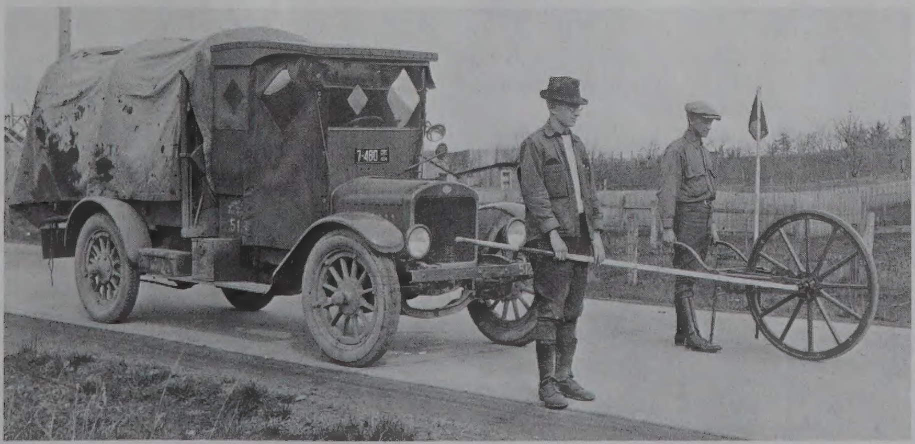
During that time, more than 20 percent of the work of the Highway Department was cooperative work with the federal government. It was determined that "an excellent" road surface could be constructed from broken stone and gravel at a fraction of the cost of pavement.

About 370 miles of the surface were built in the years 1919 and 1920.

The majority of the bridges of the period were built of reinforced concrete, and timber bridges were confined mostly to highways considered to be of secondary importance.

By 1920, the state responded to a growing demand for uniform and adequate road signs, and the Highway Commission started signing Oregon's most important state highways. Until that time, no Oregon state highways had been accurately located over their entire lengths, making it impossible to determine accurately the mileage between many points.

Roadside rest areas began appearing in the early 1920's. Where there were sources of pure water, drinking fountains were located.



MEASUREMENTS--Two Highway employees measure a road's centerline in this 1920 photograph.

In 1921, the Legislature authorized the Highway Commission to acquire park sites for the development of a state park system. Many of those sites were donated to the state.

When the 345-mile Pacific Highway was completed in 1922, Oregon became the first state west of the Mississippi to have a paved highway the entire length of the state. Also in that year, the Columbia River Highway was one mile from being completely paved.

During the 1921-22 budget period, maintenance work took on something new -- keeping roads open during the winter--with the purchase of 11 snow plows. The plows were designed to be used with tractors. Blade grading machines were also used to remove light falls of snow.

President Warren Harding dedicated the Old Oregon Trail in ceremonies at Emigrant Springs at the summit of the Blue Mountains in Umatilla County in 1923. That same year, Herbert Nunn, who became State Highway Engineer in 1917 with a newly organized commission, resigned, and Roy A. Klein was appointed to take his place.

The McKenzie Highway was completely graded between Blue River and Sisters in 1924 and only 12 miles were left to rock surface. The work, according to reports at the time was instrumental in "greatly expediting the travel from the Willamette Valley to Central Oregon."

The 1925 Legislature approved a measure removing the limitation on the state that had prevented purchasing parks sites beyond 300 feet of the roadway.

By 1926, the state highway system was 4,468.6 miles-long, with 897.1 miles (20 percent) paved, 575.8 miles (12.9 percent) surfaced with oiled macadam, 1,747.5 miles (39.2 percent) of rock and gravel surface, 300.6 miles (6.7 percent) graded and 947.6 miles (21.2 percent) unimproved.

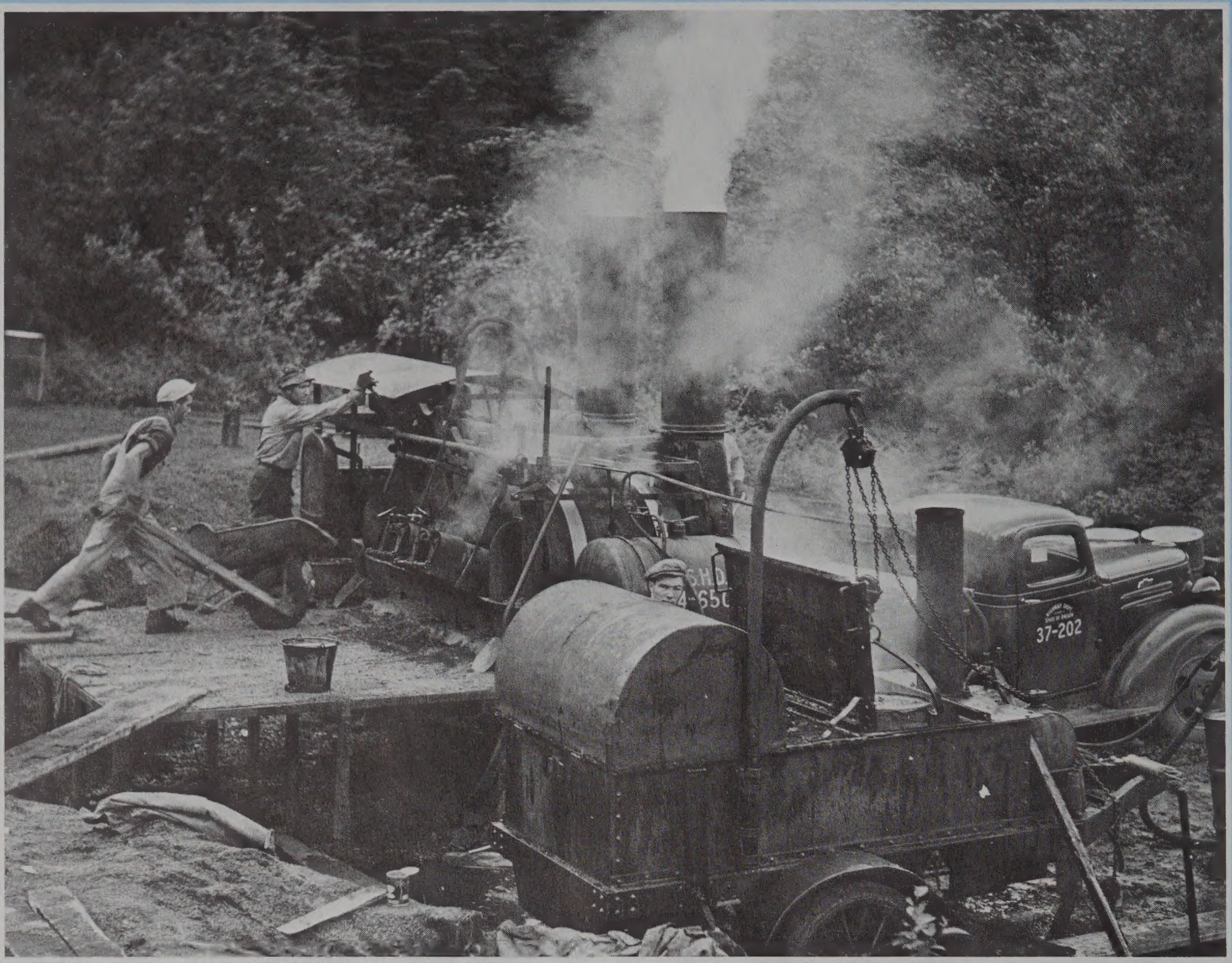
The Dalles-California Highway, with the grading of 28 miles and surfacing of 62 miles in 1926, was completed throughout its 318-mile length. The steel arch bridge across Crooked River attracted considerable attention because of its height.

Before Oregon's coastal bridges were built, a ferry operated across the Rogue River in 1927, between Indian Creek, east of Gold Beach, and Wedderburn on the Roosevelt Coast Highway. In 1928, the Highway Commission took over the operation on the ferry across Coos Bay between North Bend and Glasglow from Coos County. Both ferries were free and open from 7 a.m. to 11 p.m., with two round trips every hour.

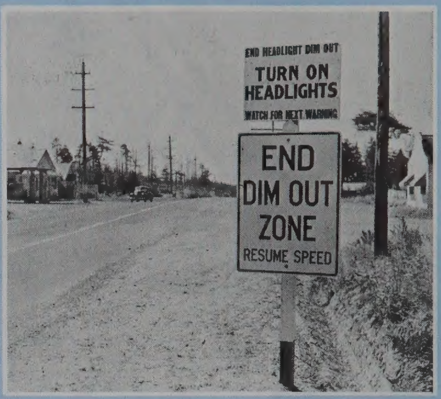
During the same period, the U.S. Supreme Court upheld earlier U.S. District Court decisions dismissing challenges to Oregon's gasoline tax and motor vehicle license law.

The 1927 Legislature directed the Highway Commission to build some of the so-called "desert road" on the Central Oregon Highway between Bend and Burns.

The Legislature authorized the commission to acquire Multnomah County's interest and share in the Interstate Bridge over the Columbia River at Vancouver and made it a free bridge, provided similar arrangements could be made by the state of Washington to acquire Clark County's interest. After several meetings, it was decided that the agreements would be effective Dec. 31, 1928.



MIXING CREW--An asphalt mixing plant is operated by Highway workers in the 1930s.



SIGN OF THE TIMES--"Dimout" signs planted along the Coast Highway told motorists to turn off their headlights during World War II (top). A Highway employee rolls and texturizes a roadway surface (above).

Jobs, projects, funds tied to war effort

World War II was disastrous from the standpoint of Oregon's highways.

Revenues decreased and costs increased to the point where existing roads could not be properly maintained. The hauling of heavy loads increased and the combination of it all brought about rapid deterioration.

Shortly after Pearl Harbor, the Highway Commission began canceling state and federal construction jobs that had not started and were not considered essential to the war effort.

By 1942, all construction jobs that were not certified by the Army, Navy and War Production Board to be essential were stopped. The only construction projects permitted were flight strips or small satellite air fields near highways, and access roads leading to military reservations and war industries.

Key military reservations and war industries included Camp White near Medford, Camp Adair near Corvallis and the Oregon and Swan Island shipyards in Portland.

It was well recognized that maintenance had to continue because of the value of highways to both the wartime and peacetime economy of the state. But maintenance, too, was hampered by a shortage of labor and materials, such as timbers and asphalt.

The Highway Department's sign shop personnel were kept busy in 1942 with increased work connected with defense and war activities, including marking evacuation routes through cities, marking "dimout" areas for motorists on the Coast Highway and posting military restricted zones.

Some other signs appearing in 1941, at the request of the Old Oregon Trail Association, included a series of 10 rustic signs, installed on the Upper Columbia and Old Oregon Trail highways. Signs also were posted at Albert Rim near Lakeview and Oregon City to identify those landmarks.

The war effort reflected a shrinking income for the Highway Department, particularly during 1943 and 1944, when gasoline was rationed and other factors limited motor-vehicle use.

By 1943, Highway income was down 22 percent from that of 1941. And consequently, the numbers of employees dropped from 2,300 to 1,600 from 1941 to 1943.

The situation prompted the authors of the department's annual report to report that wartime employees consisted largely of "old men, boys and women."

About 30 percent of the regular employees were in the armed services, while others left to accept more lucrative employment in the war industries. To cope, the commission increased Highway employees' work week from 44 to 48 hours and, by declaring an emergency, placed the oiling and paving repair crews on a 54-hour week.

In 1945, the Highway Department began awarding construction contracts under Federal Aid and state post-war programs.

Economic Transition

The transition from a wartime economy to a peacetime economy began in 1946, with Oregon moving from a time of curtailment to one of recovery and--finally--expansion.

However, the state found itself unable to hire engineers and to retain quality engineers on staff. The salaries permitted under civil services regulations in 1947-49 were considerably lower than those paid in neighboring states, the federal government and industry. In 1947, the monthly salary range for a Civil Engineer 1 was $230 to $290, and it was $430 to $530 for a Civil Engineer 5.

Labor gangs respond to stock market crash

With the stock market crash in the fall of 1929, many Oregonians who had lost their jobs were searching for new employment. The Highway Commission responded with plans to increase construction activity and create new jobs.

The result was a $2.5-million increase in construction work over the previous year. Even more projects were authorized during the summer of 1930, and those projects continued into that winter.

Labor gangs also helped fight unemployment statistics.

The Highway Commission instructed State Highway Engineer Roy A. Klein to organize the gangs. Work began throughout Oregon. For a $3 daily wage, gang members cut leaning trees and snags along roads, cut and burned brush and logs, and dug ditches.

The commission let bids in January 1930 for the largest bridge it had ever undertaken--the reinforced concrete arch bridge between Gold Beach and Wedderburn across the Rogue River.

It consisted of seven 230-foot arch spans and 328 feet of approach with a roadway width of 27 feet and two sidewalks. At a contract price of $568,181, the project had a completion date of December 1931.

The Roosevelt Highway--now known as U.S. Route 101--stopped at Yaquina Bay, Alsea Bay, Siuslaw River, Umpqua River and Coos Bay. Crossing those waters was accomplished by ferry service instead of bridges to save money.

Three years later, the 1934 Legislature authorized the Highway Commission to enter into a contract with the federal government to borrow $5.6 million in grants and loans to build the five bridges.

By 1936, the five coastal bridges were completed. The Yaquina Bay Bridge cost $1.3 million; the Alsea Bay Bridge, $778,000; the Siuslaw Bridge, $527,000; the Umpqua River Bridge, $581,000; and the Coos Bay Bridge, $2.1 million. The total cost was $166,000 lower than the originally estimated costs.

Of the 7,131 miles in the state primary and secondary road system in 1940, 1,035 were paved, 1,140 were surfaced with bituminous macadam, 2,998 were surfaced with oiled macadam, 1,125 were surfaced with rock or gravel and 414 were graded, ready for surfacing.

Only 419 miles of the system remained unimproved.

Oregon was quickly lifting itself out of the mud.

The First 75 Years

THE OREGON STATE HIGHWAY DIVISION: SERVING OREGON SINCE 1913 SECTION B

Start of the interstate

This 1953 photograph shows a survey crew on what is now known as the Boones Ferry to Willamette River section of Interstate 5. Before the birth of the interstate system in the mid-1950s, this stretch of road was simply referred to as a state-funded highway.

Oregon leads in interstate era

The nation's highway system entered a new era in the late 1950s when Congress passed the Federal-Aid Highway Program Act.

It triggered a nationwide improvement program to introduce a national system of interstate and defense highways.

Oregon's share in the program was estimated at $650 million, including $500 million in federal funds and $150 million in state funds.

The state's highways designated for the interstate system were: the Pacific Highway from the California state line south of Ashland to the Washington state line at Vancouver (I-5), the Columbia River Highway and the Old Oregon Trail from Portland to the Idaho state line near Ontario (I-80N), the Stadium-Sunset Loop in Portland (I-405), the Laurelhurst Loop in Portland (I-205), the Umatilla-Stanfield Highway (I-82), a connecting spur at Salem (I-305) and a connecting spur at Eugene (I-105).

RENEWAL--This section of I-5 near Eugene is being widened and paved as part of a statewide reconstruction program.

By September 1958, contracts for Oregon's interstate highways totaled $52.8 million.

When the interstate program began in August 1956, Oregon already had 47 miles of the interstate system completed. By the end of 1958, that system had grown to 84 miles, including 63 miles on Interstate 5 and almost 21 miles on Interstate 80N.

During this period, the Highway Department installed an electronic computer of the magnetic drum type. Engineers reported that the machine sped the analysis and processing of large amounts of data and relieved the engineering forces of large amounts of calculation work.

The primary state highway system in 1958 had 4,820 miles of roadway with 97 percent oiled or higher grade surface and the secondary system comprising 2,658 miles of roadway with 79 percent similarly improved.

Glenn L. Jackson of Medford was appointed to the state Highway Commission in 1959. That marked the beginning of his 14-year term.

Meanwhile, construction of the interstate continued at a rapid pace.

By September 1960, about 105 miles of the 310-mile Interstate 5 had been completed and opened to traffic. Almost 90 miles of the 376-mile Interstate 80N were complete and open to traffic.

Work on the largest and most expensive structure in Oregon--the crossing of the Columbia River between Astoria and Point Ellice--started in November 1962 under a bridge pier contract worth nearly $7.8 million.

The contractor completed about 50 percent of the pier work but, in the spring of 1964, encountered construction difficulties and stopped work. The contractor requested to continue its work on a cost-plus basis, but was denied and the contract was canceled. The project was re-advertised, bids were received in June 1964, and work resumed once again.

The completed bridge opened for traffic in 1966, when regular ferry service ended after a 45-year tradition.

Oregon opened its first rest area on the interstate highway system in 1962. It is located between Eugene and Albany on Interstate 5.

1950s bring expansion

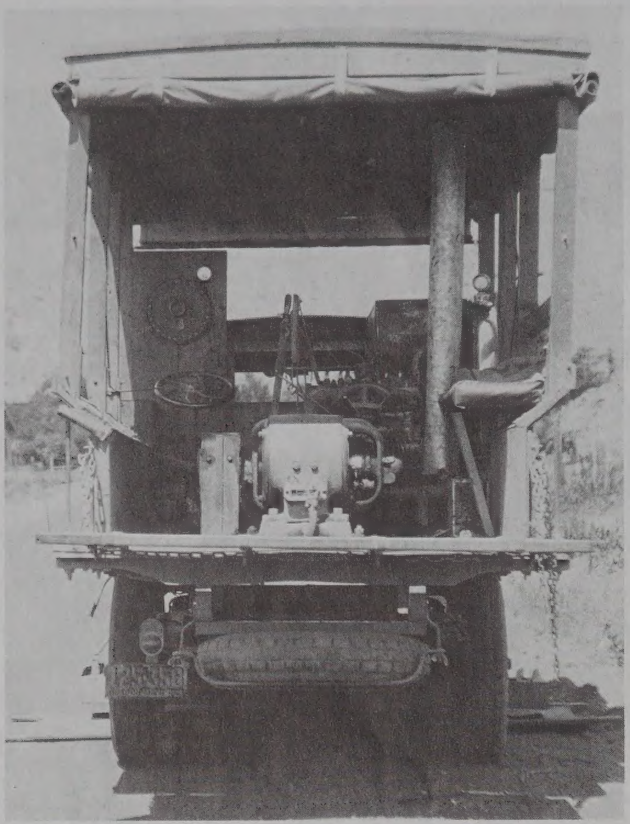
The years 1949-50 brought on the largest construction program in the history of the construction department--226 projects involving grading, paving, re-oiling, guard rail construction, landscaping and rock production.

Oregon had experienced the coldest and driest January in 50 years in 1949, and highway surfaces heaved. February continued cold, but precipitation was double the normal. Damage restoration cost $1.7 million.

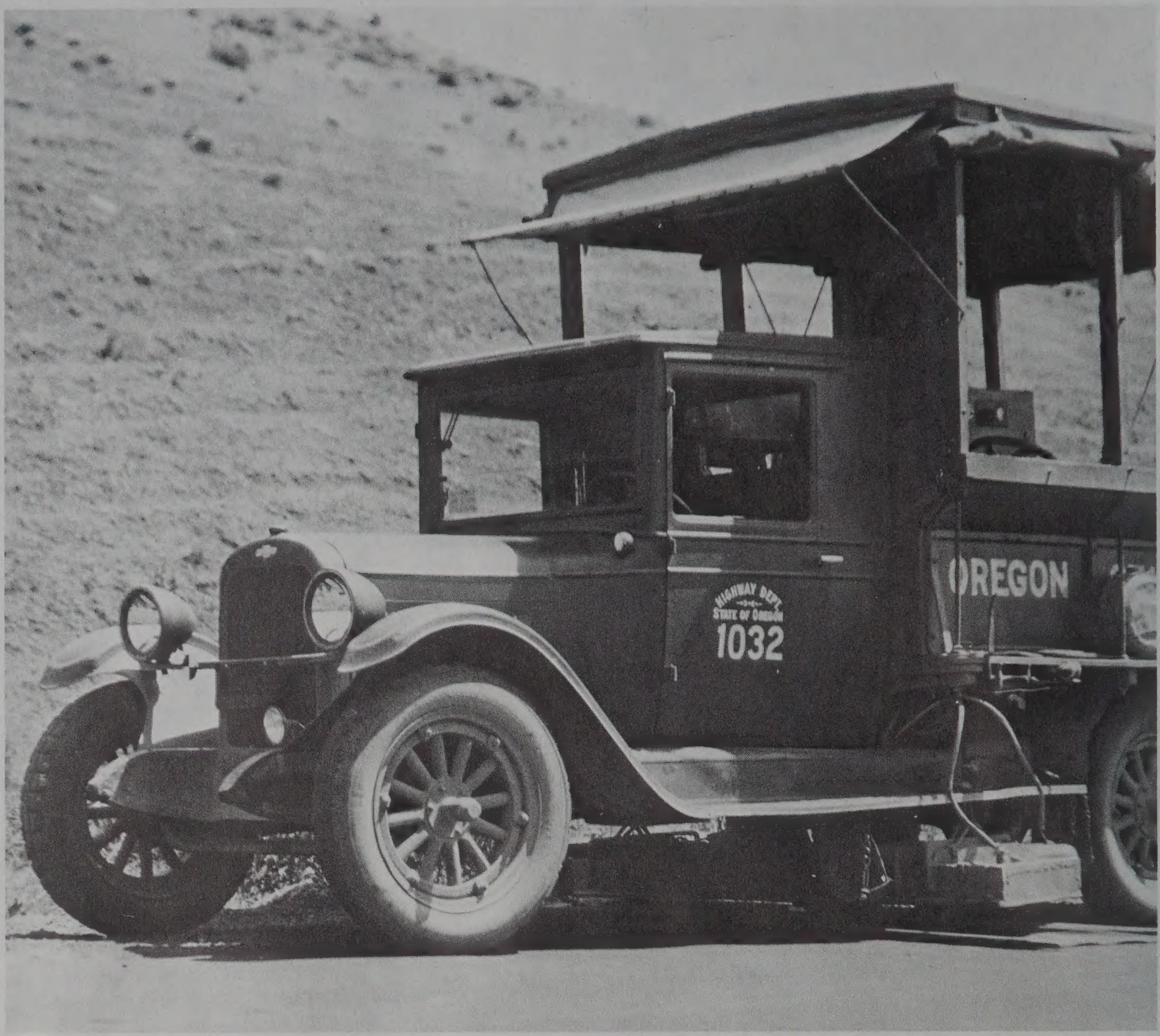
The Legislature, realizing that the increases in the gas tax, registration fee and truck tax were not sufficient to make any material improvement on the situation, authorized two bond

See WAGES, Page B2

Revived dinosaur



GENERATING UNITS--This view of the road magnet shows the gasoline engine and generating units.



ON DUTY--The magnetic road sweeper, shown here in a 1931 photo, served the Oregon Highway Department about 30 years to relieve travelers of the inconvenience caused by pneumatic tire punctures. The one-ton truck, driven by a Model A Ford motor, cost approximately $2,000 and could be operated for $30 per day.

Road magnet guarded against punctures

When weak tires and rough roads were commonly accepted by Oregon motorists, the road shoulders were scattered with sharp materials capable of puncturing tires.

Nails, screws, bolts and wire fell from rattling cars, trucks and farm wagons. And in that day, motorists were quick to curse them for causing a flat.

Blowouts were the rule. In the 1920s, it was considered a feat in automotive history for a tire to last beyond 3,000 miles. Drivers--at least smart drivers--carried a spare inner tube and tire patching kit.

State Highway Engineer Roy A. Klein eased the situation somewhat shortly after he heard of a young engineering professor at Washington State College in Pullman who had devised and constructed an elector-magnet and had mounted it underneath a small truck.

In 1928, Klein had a similar machine built for Oregon. It became known as the "nail picker."

Quoting from Klein's 1928 annual report: The road magnet was "built as an attempt to decrease the puncture evil that has been growing in importance quite rapidly in the last years."

The magnet was mounted on a one-ton truck operated by two men. The report notes that the road magnet operated 120 working days in the summer of 1928, traveled 9,874 miles and picked up 4,733 pounds of puncture-causing material.

"We consider the operation as having been very successful and a great boon to traveling motorists," Klein reported.

The 1930 report details the continued use of the nail picker.

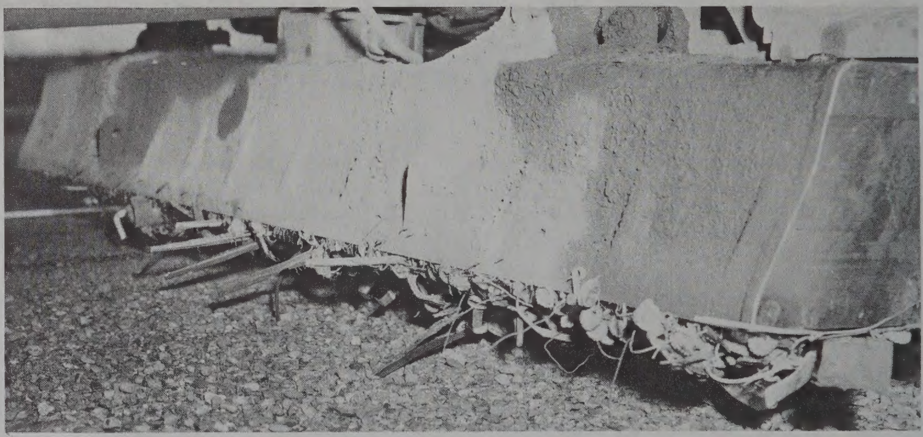
"The use of the road magnet, begun in 1928, has been continued during the two-year period. Thousands of pounds of metal, much of which would be injurious to tires, are picked up each year."

Roy Klein's 1928 puncture remedy continued into the 1960s when its use was halted with the widening of road shoulders, the introduction of more durable tires and the trimming of the state Highway Department budget.

The device was saved from eternal disuse in 1978, when Dick Nelson, an East Portland section supervisor at the time, rescued it from a Salem boneyard.

Nelson revived the machine by using it to clean road shoulders of nail and steel spills and to pick up scatterings of puncture-producing debris, after vandalism, for example. The road magnet is also currently used to pick up tire chains after severe snowstorms.

The magnet, attached to a 1975 Ford, is also used for such road chores as pot-holing and spraying, as well as cleanup work, according to Nelson.



COLLECTIONS--Ed Perrin, who was a road magnet operator when this 1960s photo was taken, examines nails and other metal scraps picked up by the magnet after an hour's operation. The collection of scrap (above, right photo) while still on the magnet is dominated by nails.

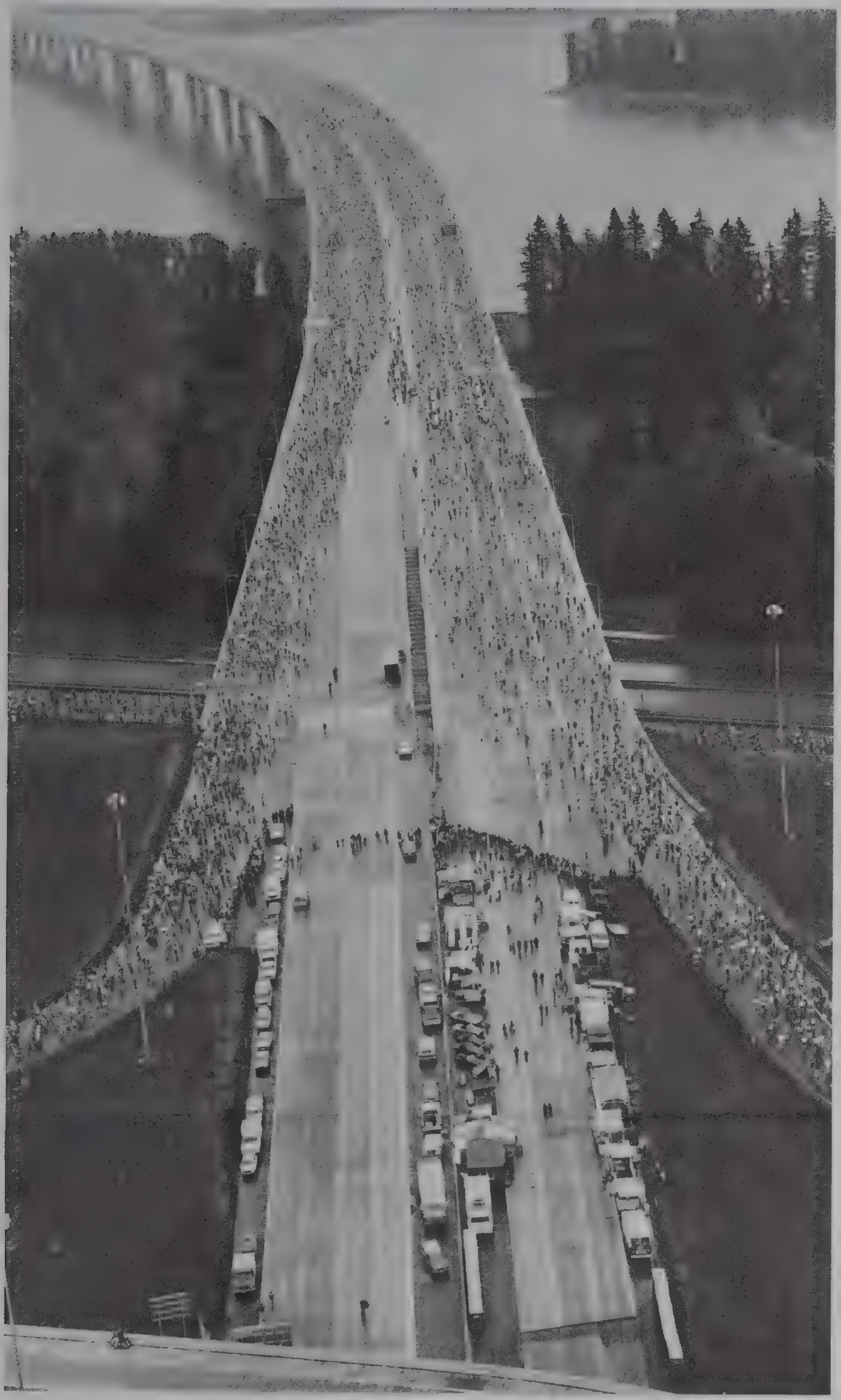
Wages go up in early 1950s

Continued from Page B1

issues--one for $40 million in 1951 and another for $32 million in 1953. The money was spent on long-needed improvements on U.S. Routes 99, 30, 97, 101 and 20. The additional funds essentially preserved other Highway revenue to care for the other state highways.

Engineering and technical salaries in the Highway Department were substantially increased in 1951 to bring them more in line with other Western States. That move was designed to help avoid repeating the situation that began in 1947-49, when Oregon had a difficult time hiring and retaining engineers because it offered relatively low salaries.

Glenn Jackson span opens with fanfare



COLUMBIA CROSSING--Runners from Oregon and Washington state cross the Glenn Jackson Memorial Bridge in the 12-kilometer Columbia Crossing road race to celebrate the bridge's public opening in May 1983.

Columbia River bridge completes final link in Interstate 205 freeway

Ground was broken for construction of the final link of the Interstate 205 freeway in 1977.

The $350-million project included a bridge over the Columbia River. In September, that bridge was named after Glenn L. Jackson, former chairman of the Oregon Transportation Commission.

The Glenn L. Jackson Memorial Bridge was dedicated and opened to traffic--ahead of schedule--on Dec. 15, 1982. The public opening and celebration was held on May 15, 1983, and included a 12-kilometer run between Oregon and Washington state. A Tanzanian, Gidamis Shahanga, crossed the line in 34:13--fast enough to finish in first place, ahead of the 12,000-person field.

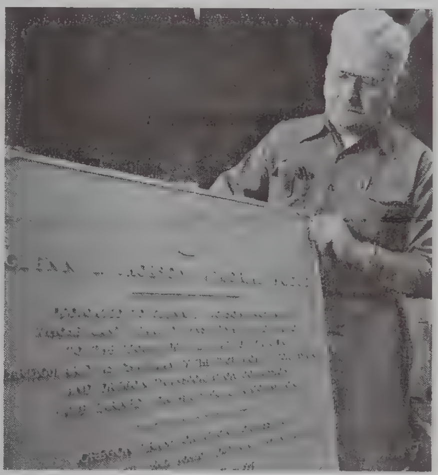
The Fremont Bridge and Stadium Freeway, at a combined cost of $75 million, were the largest structures in the state highway system in 1969 and 1970.

The Interstate 405 loop, bypassing Portland on the west side, was completed when the Fremont Bridge complex opened in November 1973.

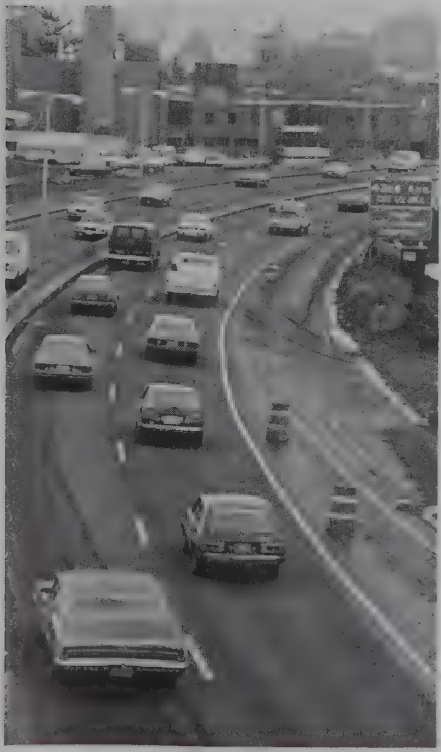
During that same year, four lanes of Interstate 5 were completed from border to border, and the freeway was being widened to six lanes between Portland and Salem. Four lanes of Interstate 80N were complete, except for a nine-mile section between La Grande and North Powder.

But as 1973 ended, the Department of Transportation was faced with uncertainty due to an escalating energy crisis, caused by an Arab oil boycott and fuel shortage.

MODEL--A model of the Fremont Bridge and West Fremont interchange is displayed during the 1980 National Transportation Week celebration in Portland.



CORNERSTONE--A Highway Division employee admires the brass plaque marking the Glenn Jackson Memorial Bridge.



BANFIELD--The Banfield Freeway, shown here at the 42nd Avenue interchange, had an overload of traffic before the light-rail line was added.

Transitway considered most complex project

The 1985 construction season was one the busiest on record, when the Highway Division let bids on 221 projects.

The Banfield Transitway opened on Sept. 5, 1986, marking the completion of the most complex transportation project in state history. Work started in 1982 and included reconstruction of the Banfield Freeway by the Highway Division and construction of the 15-mile light-rail line between Portland and Gresham by Tri-Met.

Included were $74 million in state and federal highway funds to construct the freeway and $245 million in federal, state and local funds to construct the light rail line.

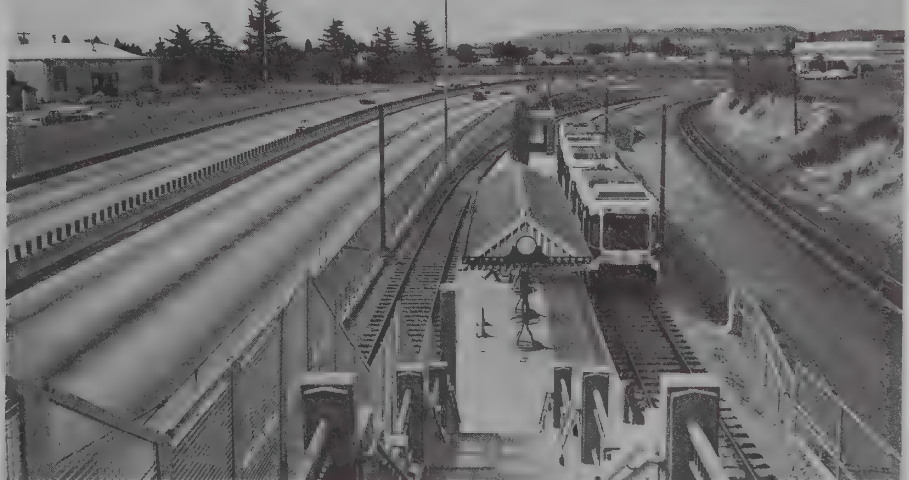
The project's complexity was enhanced by the decision to keep the freeway open during construction, meaning 72,000 vehicles a day had to be accommodated.

Oregon's interstate system will be complete this fall, with the opening of the Oregon portion of I-82 between Umatilla and Interstate 84 (formerly I-80N).

The event will mark the completion of the interstate freeway system in Oregon, about 32 years after the interstate system was initiated.

The I-82 bridge spanning the Columbia River was dedicated by Oregon and Washington state officials last October. The $19-million bridge completed the freeway link between the two states.

The 3,365-foot bridge is similar in construction to the I-205 Glenn Jackson Bridge near Portland.



MEETING OF THE MODES--A light-rail car stops for passengers beside the Banfield on Portland's east side.

After the storm

CLEANING UP--A snowplow clears the way for motorists after a storm during the winter of 1963-64. The snow, combined with subsequent rainfall, flooded highways, destroyed state and county bridges, and fouled Christmas holiday traveling plans.

Snowstorm sacks Oregon

The snowfall for the winter of 1963-64, was one of the heaviest on record.

Most of the snow fell after January 1964, and snowplows continued operating until mid-May.

Highways closed by snow for the winter were the Mt. Hood Loop, McKenzie Pass, East and West Diamond Lake, Crater Lake North and Sun Mountain.

The new Clear Lake-Belknap Springs Highway replaced the McKenzie Pass section and provided a year-round connection from Eugene to the Santiam Highway.

During Christmas Week, 1964, all of Oregon suffered major flooding--as did northern California, western Nevada, western Idaho and southern Washington.

At the time, there was more than a normal snow cover in the Cascade Range. The upper air stream patterns changed and carried a continuing volume of warm, moist air and a sustained, abnormal rise in temperature from Dec. 19-24.

Hundreds of Christmas holiday travelers were stranded.

The rising, warm, moist marine air resulted in rainfall of more than eight inches in the five days. That, added to the snow pack, resulted in a maximum flow in Oregon river basins, the largest of which was the Willamette. A series of flood control dams helped prevent major flood in Eugene, Corvallis, Albany, Salem and Portland.

Other streams--including the Deschutes, Grande Ronde, Umpqua and Rogue--were not as fortunate and major highway and county road bridges were lost.

The state's emergency command center responded. Hundreds of Christmas holiday travelers were stranded. On the night of Dec. 22, all major mountain passes were reported to be impassable. Within two days, one road was back in operation and, at the end of the week, five routes were in service. The remaining two routes remained closed for up to six weeks.

While mountain passes were the hardest hit, damage throughout the state was general and severe.

It became clear that state forces and equipment were not sufficient to handle the emergency. The state contracted with local firms for equipment. The state-contractor relationship in the emergency was later reported as excellent.

During late January, another intense storm hit. Although it didn't cover as wide an area, it inflicted about $4 million in addition damage to the federal-aid system.

That brought the damage estimate to the federal-aid system to approximately $33.4 million. The Bureau of Public Roads accepted responsibility for repairs to several sections of the forest highway system--a bill of more than $33 million.

On the portion of the federal-aid system outside the forest highway network, the federal government picked up $26 million of that cost, while the state absorbed $6.5 million and the counties approximately $900,000.

WALL OF SNOW--Snowplow crews take to the roads quickly after the flakes begin falling to keep Oregon's state highways safe.

Crews take windstorm in stride

An October 1962 storm destroyed more property than ever recorded in Oregon in terms of dollar value. At least 24 persons lost their lives, hundreds of million dollars worth of property were destroyed, and millions of board feet of timber were blown down by winds reaching speeds of over 100 mph.

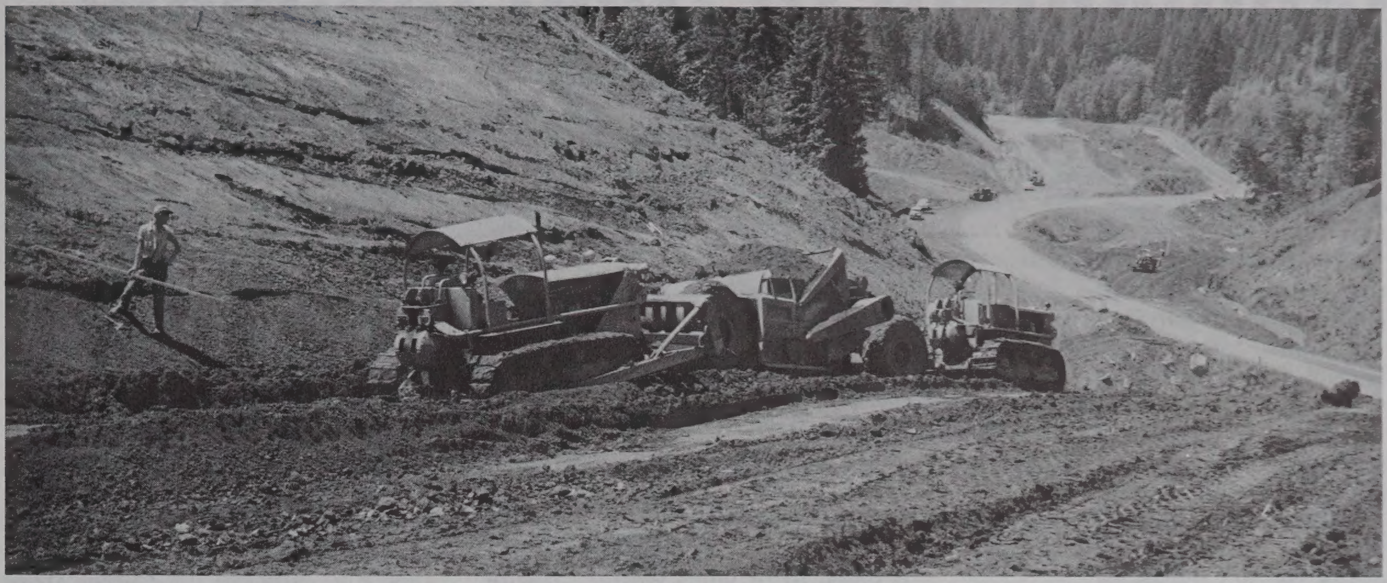
Actual damage to state Highway Department facilities alone was pegged at between $400,000 and $500,000. Highway reports indicate maintenance crews took the disaster in stride and worked around the clock to have all state highways open and safe to travel "in a remarkably short time."

Slogan repealed

The 1959 Legislature required a slogan on Oregon's vehicle license plate.

"Pacific Wonderland" was selected as the state's slogan in a contest. Eventually, in 1963, the law requiring a license plate slogan was repealed.

I-5 completion was Highway milestone



UNDER CONSTRUCTION--Road workers grade the Divide-to-Anlauf section of Interstate 5 about 20 miles south of Eugene in this 1952 photograph.

Oregon's Highway Department construction program hit one of its most significant milestones with the completion of Interstate 5 to four lanes.

It marked the first time travelers could enter the state at the Interstate bridge in Portland and head southbound along the high-speed freeway to California without encountering one traffic signal or stop sign.

The 308-mile highway was dedicated on Oct. 22, 1966, in ceremonies at the Cow Creek Safety Rest Area in southern Douglas County.

I-5 serves as an integral part of the national system of interstate and defense highways. Its fullest length runs from Blaine, Wash., on the Canadian border to San Ysidro, Calif., on the Mexican border, about 1,385 miles.

Before I-5 was dedicated, Interstate 80N had about 205 of the 375 miles in Oregon's interstate system's.

The dedication of Interstate 80N--also known as the Old Oregon Trail Highway--was held at Baker Valley Safety Rest Area on July 3, 1975.

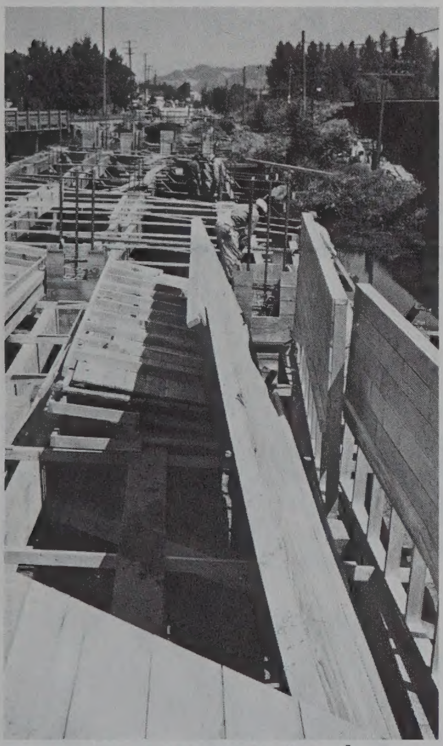
Even by that time, there had been a request to redesignate I-80N and eliminate the direction designation. The request came from the American Association of State Highway and Transportation Officials (AASHTO).

Idaho agreed to that name change in May 1975, and Utah strongly urged the name be changed in June 1975. Because I-80N and I-80 joined in Utah, it was the general opinion to omit the dual designation to avoid confusing the traveling public.

Oregon opposed the change, but conceded because of pressures from AASHTO. Interstate 80N became I-84.

The name change, to be made by July 1, 1980, was to comply with a federal policy of discouraging the use of directional letters in naming freeways.

The contract to change the road signs cost less than $120,000.



BRIDGE BUILDING--Work progresses on this section of the Pacific Highway south of Cottage Grove.

NEW ROAD--Motorists drive on what is now known as Interstate 5 south of Canyonville. A new route is being built along side it.

Floods cause $4 million damage

Heavy rains and flooding caused $4 million in damage to western Oregon highways in December 1977.

Slides were reported at Homesteader Creek on U.S. Route 101 five miles south of Pistol River and on the Wilson River Highway east of Tillamook.

Two years later, in 1980, an early January storm hit the Columbia Gorge, dumping snow from Portland to Hood River. Although many motorists were stranded, no deaths or injuries were reported.

During that storm, the state used 18 rotary snow plows, eight heavy snow plows, four machine plows, 15 light trucks, five graders and 125 people to move one million tons of snow and clear the road.

OUT OF THE WASH--Oregon Route 35 near Mount Hood is covered with debris after a 1980 flood.

CHECKING DAMAGE--A Highway crew checks the damage done by a flood on Oregon Route 35 near Mount Hood.

BIRDS-EYE VIEW--This aerial photo of the flood-damaged area of Oregon Route 35 illustrates the water's force.

Public comment now integral component of road planning

Used to be that information about highway jobs was held close to the vest. People didn't understand what road work would be done. And when it did, they often wondered why.

Things have changed, thanks to the introduction of the Six-Year Highway Improvement Program.

Former State Highway Engineer Larry Rulien, a retiree since January, was in the Program Section when the division decided it needed some kind of six-year planning process. He helped develop it.

Rulien said that process has "opened up" the process of planning Oregon's highways.

"We now have public discussion around the state, and I feel good about that," he said.

"I think it has helped us receive good legislative support for our programs. We've gotten criticism, too, but also recognition of our needs."

The division updates the Six-Year Highway Improvement Program every two years. A critical component of that update is a series of statewide public meetings.

For example, this year's meetings, held in February and March, brought out opinions from local government officials and citizens on Access Oregon Highways, an aspect of the six-year plan tied to economic development and tourism.

'We now have public discussion around the state, and I feel good about that.'

This year, as in the past, priority is given to projects with local support.

Updating the six-year program every two years is just one chance for the public to participate in planning Oregon highways. It is an ongoing process as citizens are talking more and more about their transportation needs, tying good roads to healthy local and state economies.

Public meetings were recently held to give citizens, local government officials, state agencies, business people and others who are interested in the future of U.S. Route 101 a chance to help develop a long-range strategy for improving the Coast Highway.

The division recognized that U.S. 101 has unique scenic beauty but faces conflicting demands from tourists, residents, businesses and lumber and other industrial users.

Material gathered from the hearings on problems facing motorists and communities along the highway will help the Highway Division formulate long-range strategy for improvements to the coastal route.

Public interest in recent other major projects, coupled with the desire to educate the public, have resulted in the production of newsletters.

For instance, public interest in the replacement of the historic Alsea Bay Bridge spawned a fact sheet to keep people informed of the project's progress.

One advantage of the newsletter format is that it can target specific publics. An early example is the "Mission: Possible" newsletter that followed the progress of the Mission Street reconstruction in Salem. It followed a previous Salem project newsletter on the widening of Commercial Street.

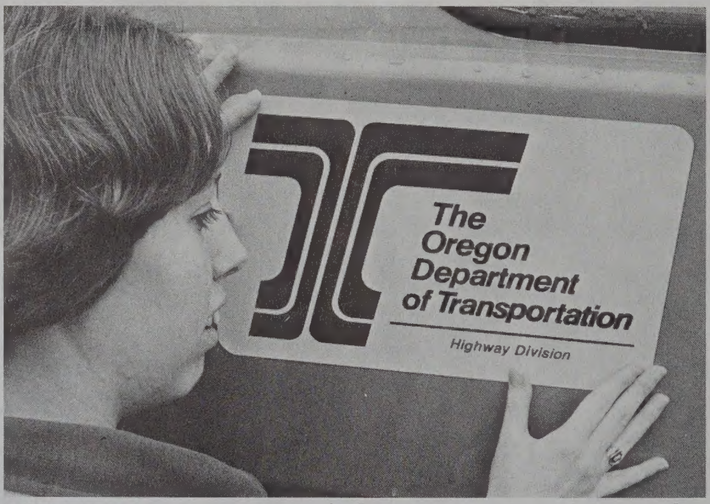
Lee Franklin, a Salem project manager, said, "you are always going to have some problems crop up because you are dealing with unknowns on a construction project.

"If property owners know what you are up against, they are more sympathetic to delays or other impacts. It's a shared involvement."

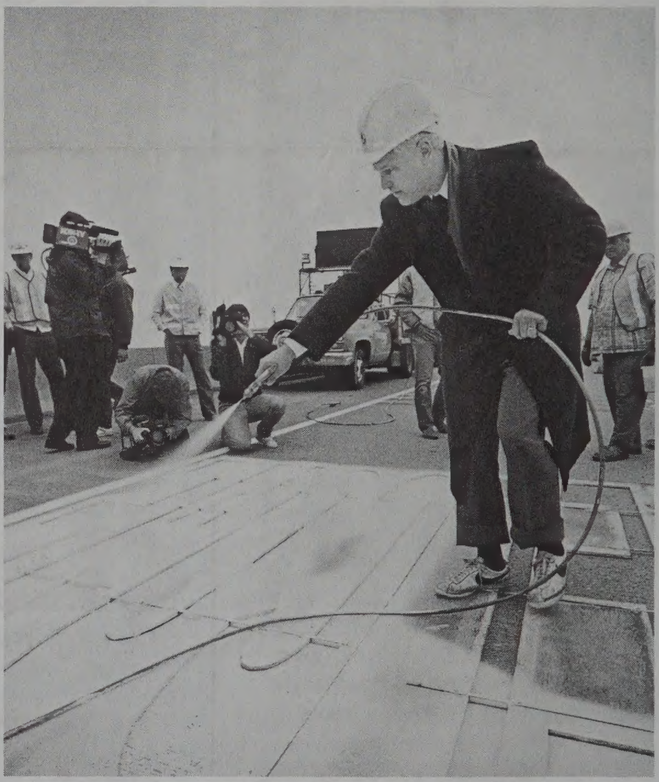
HEARING--Public meetings such as this one are held every two years to gather comment on the Highway Division's Six-Year Highway Improvement Program.

Signs of the times

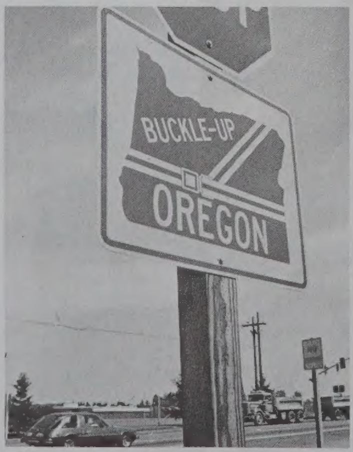
HELP--Billboards reading "Our Roads Need Help" sprouted up throughout the state in support of a 2-cent gas tax in May 1978.


The Oregon Department of Transportation
Highway Division

NEW NAME--By action of the Oregon Legislature, the Highway Department became a division of the Oregon Department of Transportation on July 1, 1969. ODOT vehicles reflected the new identity.

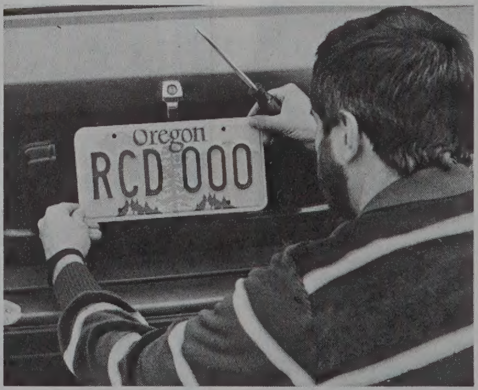


PUTTING OUT THE MAT--Gov. Neil Goldschmidt in May 1987 painted "Welcome to Oregon" on the Interstate 205 bridge, one of six locations with the same design at major entrances to the state.



BUCKLE UP--Signs reminding Oregon travelers to buckle their seat belts were placed at the exits of some state facilities in the fall of 1987.

NEW SPEED--Oregon increased the speed limit of its rural interstate freeways from 55 mph to 65 mph in the fall of 1987.



NEW PLATE--This new license plate design will be available for Oregon vehicles on July 1, 1988.

Computers used to design highways

AT THE KEYBOARD--Road Design employees consider the alternatives in a draft of a highway project on the computer-aided design and drafting system, or CADD. Since the department purchased its first CADD systems in 1984, engineers have been able to eliminate tracing and wasteful duplication chores. The end result has been a savings of time and money, according to Wayne Cobine, final design engineer.

Highway engineers can design roads faster and more efficiently with a computer-aided design and drafting system (CADD).

Wayne Cobine, final design engineer in the Road Design Unit, knows its value.

"If you don't keep up with the technology, you're going to get behind," he said. "Oregon has kept pace with technology, and now is a leader in the field."

CADD grew out of a consultant's study in 1982. Two years later, ODOT purchased its first CADD equipment--four terminals in Road Design, two in the Bridge Section and one in the Mapping Section. Initially, staff was sent to Huntsville, Ala., for training. The original trainees became trainers for others.

> **' Oregon has kept pace with technology and now is a leader in the field. '**

CADD enables engineers and others to develop plans and drawings on dual computer screens. The two screens enable the user to see both an overview and smaller segments of a project at the same time.

Once a design or drawing has been stored in the computer, it can be called back to the screen at any time and revised, eliminating tracing and wasteful duplication.

In drafting projects, the division is able to make changes rapidly, erase details and amend a design in a matter of minutes.

"As for design, it allows us to ask 'What if' and we do," Cobine said.

For example, with CADD an engineer can develop numerous approaches to a project. That's an impractical option with more traditional methods because of the long hours of calculations needed.

In addition to getting the final design produced quicker, the graphics also allow an engineer to develop a variety of designs for any particular project and investigate several design alternatives.

Cobine said that the machine cannot act as a substitute to a sound engineering background.

Instead, CADD allows engineers trial runs at proposed designs. It permits them to build on a design, making additions, deletions and calculations.

Since the original purchases in 1984, CADD systems have been added to Traffic, Right of Way, Environmental, and the Highway Division's Regions 1 and 2 offices. More CADD units have also been added to Final Design and Bridge.

The CADD system also has allowed Road Design to save on labor costs.

"We reduced staff by 12 employees," Cobine said.

HEALTH CHECK--An ODOT employee has her blood pressure checked as part of the department's Wellness Program, which sets a foundation for employees to invest in their own health.

Oregon State Highway Engineers: 1913 to now

H. L. Bowlby	June 3, 1913 to March 31, 1915
E.I. Cantine*	April 1, 1915 to May 21, 1915
John L. Lewis	May 22, 1915 to Aug. 27, 1915
E. I. Cantine*	Aug. 28, 1915 to Jan. 19, 1916
John L. Lewis	Jan. 20, 1916 to April 10, 1917
Herbert Nunn	April 10, 1917 to March 31, 1923
Roy A. Klein	April 1, 1923 to Feb. 29, 1932
R.H. "Sam" Baldock	March 1, 1932 to Aug. 15, 1956
W.C. "Dutch" Williams	Aug. 16, 1956 to Nov. 30, 1961
Forrest Cooper	Dec. 1, 1961 to June 30, 1970
R.L. "Rod" Porter	July 1, 1970 to Dec. 31, 1971
Tom Edwards	Jan. 1, 1972 to Dec. 31, 1972
F. B. Klaboe	Jan. 1, 1973 to May 31, 1976
Scott Coulter	June 1, 1976 to Aug. 4, 1985
Larry Rulien	Sept. 9, 1985 to Jan. 31, 1988
Donald E. Forbes	Feb. 22, 1988 to Present

** During the period April 1, 1915, to April 10, 1917, John L. Lewis, then state highway engineer, was, by a law then in effect, State Highway Engineer, exofficio. During the same period, E. I. Cantine was deputy state highway engineer through appointment by the state highway engineer through appointment by the Oregon State Highway Commission. Lewis relinquished his responsibilities as state highway engineer to Cantine during the two short periods indicated.*

Test your Highway I.Q.

1. At one time, all three Oregon Highway Commission members had the same college sports experience. What sport and position did they play?

2. Name Oregon's first highway engineer.

3. Roadside rest areas began to appear in what year? (a) the early 1920s; (b) the 1930s; (c) the 1940s; (d) in the 1950s, with the beginning of the interstate freeway system.

4. How did traffic get across the rivers and bays prior to the completion of the coastal bridges?

5. The Travel and Information Division was established in what year?

6. The interstate program began in what year? (a) 1952; (b) 1956; (c) 1960; (d) 1964.

7. What was the major disaster to hit Oregon during Christmas week, 1964?

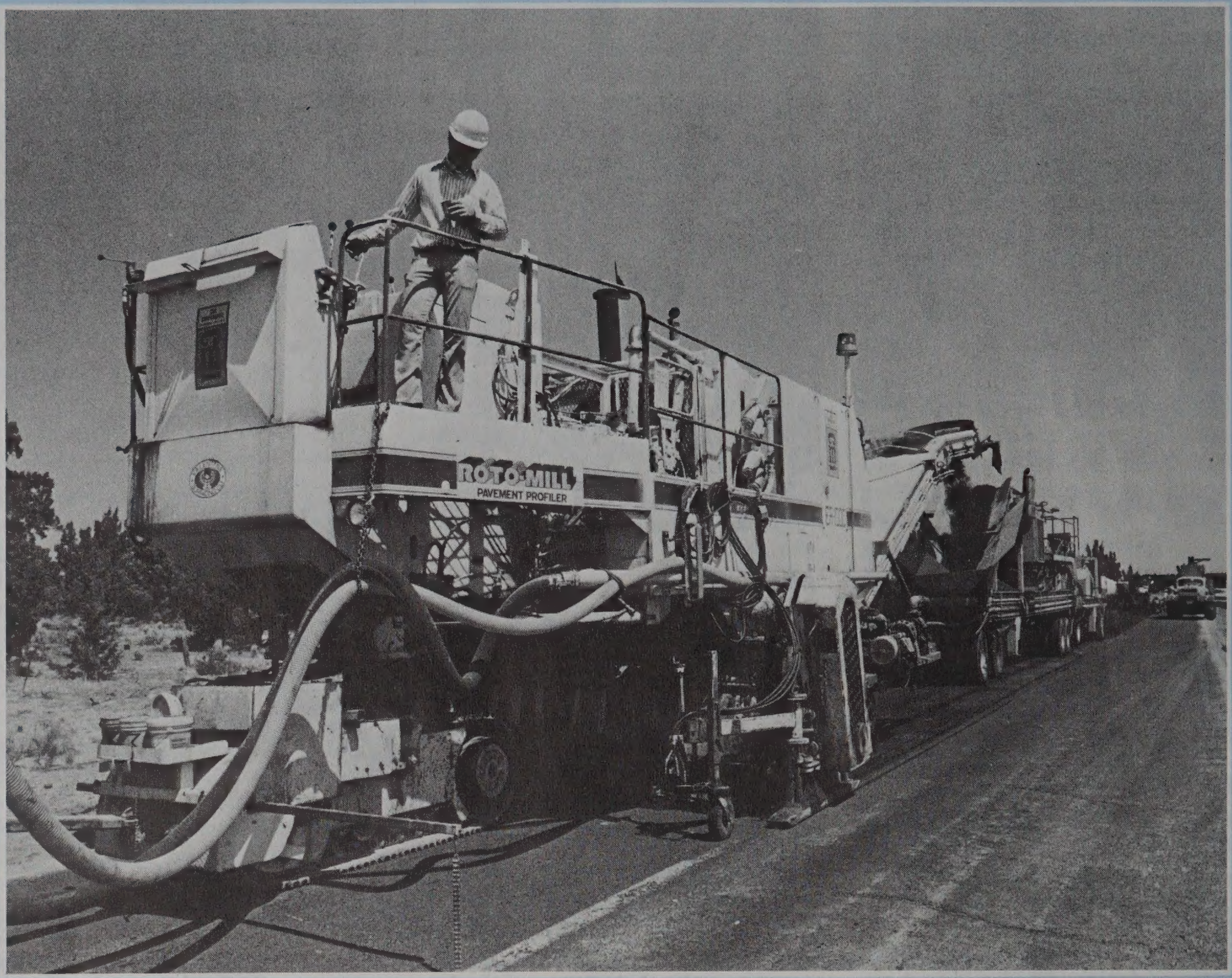
8. The Highway Department became a division of the state Department of Transportation in what year?

9. The Columbia River bridge linking Oregon and Washington on Interstate 205 is named for what former chairman of the Oregon Transportation Commission?

10. The Banfield Transitway work began in 1982. In what year did it open?

See ANSWERS, Page B8

Paving done on the spot



THE TRAIN--A train of pavement recycling machinery chews up old pavement using a milling machine, then replaces it with new.

An asphalt recycling process for repairing highways recently won the Oregon Highway Division a national "energy innovation" citation from the U.S. Department of Energy.

Known as cold in-place recycling, a train of special equipment paves a road surface in one pass.

The equipment breaks up the old pavement, grinds it into pieces two inches or smaller, mixes the old pavement with asphalt and additives and then forms a new surface.

The process saves about $100,000 a mile over more traditional overlay methods, according to Dale Allen, Region 4 engineer. Allen helped introduce, refine and advocate cold in-place recycling in Oregon.

After the process and equipment had been tested, Oregon became one of the first states to launch the recycling idea.

During the summer of 1985, about 78 centerline miles of highway in Central Oregon were paved using the cold in-place recycling method. The following year, three times that much roadway were recycled.

The process has two main advantages over standard asphalt overlays: It can be done more quickly and for less money.

It requires 1 to 2 percent new asphalt and a complete reuse of old road materials, where conventional hog-mix paving needs 6 percent new asphalt and all new rock.

It is estimated that the 250 miles of highways that have been recycled through the process would have cost an additional $25 million if conventional paving methods had been used, according to Dick Nelson, District 10 maintenance supervisor, Bend.

Region 4 staff in Bend worked with Oregon State University scientists to improve the once-experimental process and its use was pioneered east of the Cascades.

Nelson said he hopes it will soon be used throughout Oregon, although cold recycling has been less popular in the Highway Division's Regions 1 and 2.

In part, that's because the recycling method seems best suited for long, low- volume roads, where the equipment can move at a steady rate and where pavement normally has a longer life than in urban areas.

TIME OUT--Bicyclists take a break during an afternoon ride.

'Bicycle bill' passed in '71

The 1971 Legislature passed what is popularly known as the "bicycle bill."

It requires projects financed through the State Highway Fund to allocate not less than 1 percent of total project costs to establish foot paths and bicycle trails.

The bicycle bill specifically applies to the Oregon Transportation Commission, or any city or county government entity that uses the State Highway Fund.

The answers: Who, what, when

1. **Question:** At one time, all three Oregon Highway Commission members had the same college sports experience. What sport and position did they play?
   Answer: Quarterback. Ben Chandler of Coos Bay was a former quarterback and end at the University of Oregon from 1908 to 1912. Charles Reynolds of La Grande guided Oregon State during the 1909-12 seasons. Milo McIver of Portland played with Washington State as a freshman in 1917 and, after serving in World War I, until 1926.
2. **Question:** Name Oregon's first highway engineer.
   Answer: Major Henry L. Bowlby.
3. **Question:** Roadside rest areas began to appear in what year?
   Answer: A. The early 1920s.
4. **Question:** How did traffic cross the rivers and bays prior to the completion of the coastal bridges?
   Answer: By ferries.
5. **Question:** The Travel and Information Division was established in what year?
   Answer: 1935.
6. **Question:** The interstate program began in what year? (a) 1952; (b) 1956; (c) 1960; or (d) 1964.
   Answer: 1956.
7. **Question:** What was the major disaster to hit Oregon during Christmas week in 1964?
   Answer: A flood.
8. **Question:** The Highway Department became a division of the state Department of Transportation in what year?
   Answer: 1969.
9. **Question:** The Columbia River bridge, linking Oregon and Washington state on Interstate 205, is named for what former chairman of the Oregon Transportation Commission?
   Answer: Glenn L. Jackson.
10. **Question:** The Banfield Transitway work began in 1982. When did it open?
    Answer: 1986.

MAX--Portland's light-rail line, known as the Metropolitan Area Express, started operation in 1986.